STATE OF HAWAI'I PRIMARY CARE NEEDS ASSESSMENT DATA BOOK 2007

FAMILY HEALTH SERVICES DIVISION
HAWAI'I DEPARTMENT OF HEALTH
April 2008

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FOREWORD

The Hawai'i Department of Health is pleased to present the fifth edition of the Primary Care Needs Assessment Data Book (Data Book).

The Data Book is intended primarily to serve as a source of comparative health statistics on 28 primary care service areas in the State of Hawai‘i. By presenting comparative information on small areas, the document attempts to provide a glimpse of the variation among communities in terms of selected risk and resource indicators. This enables communities not only to examine their specific needs, but also to have a sense of the big picture as they assess their own health care needs and problems over time.

It is my hope that this document will be a useful source of quantitative information to health policymakers, planners and all of us in the community who share a common desire to improve access to primary care, especially for the underserved and vulnerable populations of Hawai‘i.

Please take a moment to complete the attached survey about the usefulness of the data book.

Chiyome Leinaala Fukino, M.D.
Director of Health

ACKNOWLEDGMENTS

The Family Health Services Division appreciates the assistance given by the following organizations in providing data for this document:

- Hawai‘i Department of Health, Office of Health Status Monitoring;
- Hawai‘i Department of Health, Behavioral Risk Factor Surveillance System;
- Hawai‘i Department of Health. Family Health Services Division;
- Hawai‘i Department of Health, Hawai‘i Health Data Warehouse;
- Hawai‘i Department of Labor and Industrial Relations, Research and Statistics Office; and
- Hawai‘i Department of Human Services, Information Systems Office.

The following Family Health Services Division, DOH, personnel directed the design and creation of this document:

- Loretta J. Fuddy A.C.S.W., M.P.H.; *Chief, Family Health Services Division*
- Donald Hayes, M.D., M.P.H.; *Epidemiologist, Family Health Services Division*
- Mark Eshima, M.A.; *Research Statistician, Family Health Services Division*
- Maile Burke, M.P.A.; *Primary Care Planner, Family Health Services Division*

Requests for additional copies of the *Primary Care Needs Assessment Data Book* call (808) 733-9017, or fax (808) 733-8369, while supplies last.

The *Primary Care Needs Assessment Data Book* can be located on the internet at: http://hawaii.gov/health/doc/pcna2007databook.pdf

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CHAPTER 1 INTRODUCTION

Purpose

The *Primary Care Needs Assessment Data Book* is a compendium of comparative health statistics on 28 primary care service areas in the State of Hawai‘i. It is intended to assist policymakers, health planners, health care professionals and community members in making assessments of the relative health risks and primary health care needs of these communities. The comparison of areas throughout the state allows planners and policymakers to have a broader perspective when examining the needs of their individual communities.

The 2007 revision of the Data Book includes 2006-07 socio-economic information released by the Hawai‘i Department of Human Services and the Department of Labor & Industrial Relations; and Health Statistics from the Department of Health’s Office of Health Status Monitoring and Behavioral Risk Factor Surveillance System Program. Data based on the 2000 U.S. Census is the latest available and has not changed. This information provides a risk assessment for the 28 Primary Care Service Areas. Some of the demographic data used in this publication was 2000 U.S. Census data. Until we receive alternative data sources, we will have to rely on the census as our chief source of demographic data.

The Department is continuing to pilot two new health risk indexes; one for chronic disease, the other to define oral health risk.

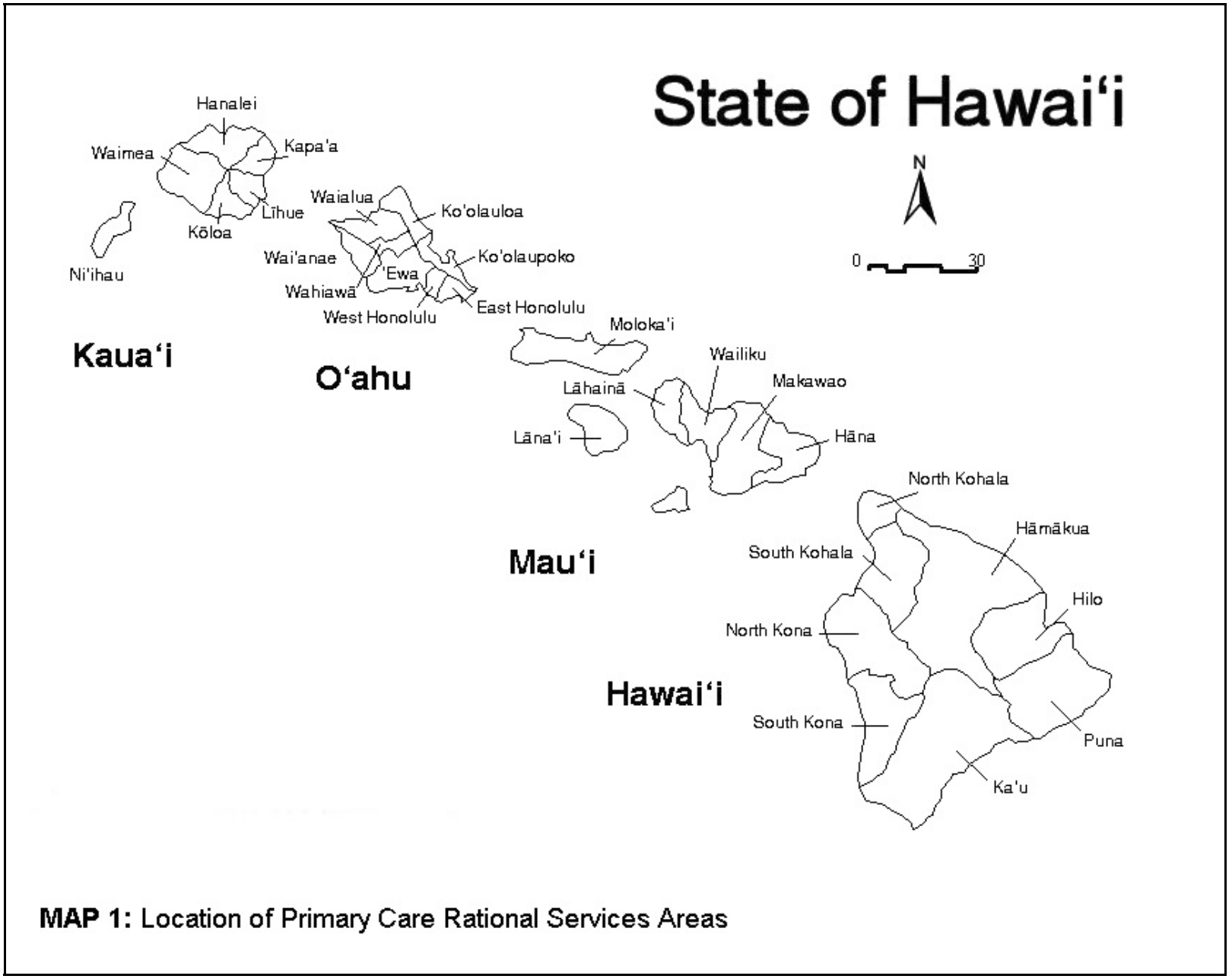
Delineation of Service Areas

The rural health associations of the counties of Hawai‘i, Maui and Kaua‘i have delineated the *rational service areas* under their respective jurisdictions, here in after cited as Primary Care Service Areas. The Needs Assessment Committee of the Primary Care Roundtable has participated in the delineation of *rational service areas* for the county of Honolulu.

Statistics are provided for the following 28 geographic areas that are considered rational service areas for the delivery of primary health services in the State of Hawai‘i:

County	Primary Care Service Areas	Census Tract(s)
Honolulu City & County	East Honolulu	1–45
	West Honolulu	46–72
	‘Ewa	73–89
	Wahiawā	90–95
	Wai‘anae	96–98
	Waialua	99–100
	Ko‘olau Loa	101–102
	Ko‘olau Poko	103–113

County	Primary Care Service Areas	Census Tract(s)
Hawai‘i County	Hilo	201–209
	Puna	210–211
	Ka‘ū	212
	South Kona	213–214
	North Kona	215–216
	South Kohala	217
	North Kohala	218
	Hāmākua	219–221
Maui County	Hāna	301
	Makawao	302–305
	Wailuku	306–313
	Lāhainā	314–315
	Lāna‘i	316
	Moloka‘i w/o Kalawao	317–318
Kaua‘i County	Hanalei	401
	Kapa‘a	402–403
	Līhu‘e	404–405
	Kōloa	406–407
	Waimea	408–409
	Ni‘ihau	410



MAP 1: Location of Primary Care Rational Services Areas

CHAPTER 2 PRIMARY CARE ACCESS INDICATORS

This section contains a discussion of the indicators chosen to develop an assessment of primary care access for our communities as well as the limitations of this approach to small area planning.

Categories of Data

Data was collected from both public documents and from unpublished files by several government agencies, namely: the United States Bureau of the Census, for demographic data from the 2000 census; the Hawai'i Department of Health, Office of Health Status Monitoring, for vital statistics data, the Behavioral Risk Factor Surveillance System Program, for adult risk factor data; the Hawai'i Department of Labor and Industrial Relations, Research and Statistics Office, for labor market statistics; and the Hawai'i Department of Human Services, Information Systems Office, for financial assistance data. This data was then classified into three different types of indicators, showing *population demographic status, health status, and socio-economic status.*

Data Limitations and Interpretation

Comparison and Ranking of Service Areas

The 28 service areas are unweighted with respect to population, i.e. they are treated equally regardless of the absolute size of the population in the area. This is to avoid the bias towards areas with extremely large population sizes, e.g., East and West Honolulu relative to Hāna or Ka'u. Also, the ranking of service areas is unweighted with respect to the variables, i.e., the standardized scores for each of the indicators are simply added up to arrive at a composite index. It must be noted that the ranking is based on only a few selected indicators and that any changes to these variables may also affect the ranking. Finally, it must be emphasized that the numbers should be interpreted as **relative** rather than as absolute measures of risk.

Notes on Confidence Intervals

In order to assess whether a particular community's rate on a health status indicator is significantly different from some baseline rate or from the county or state average, it is necessary to make comparisons of the rates. But simply looking at the rates and determining which is higher or lower may not be meaningful when the *small numbers problem* exists. Random fluctuations occur on a year-to-year basis in the number of deaths that occur in a community, apart from the real changes in mortality rates due to epidemics, poor access to care, etc. In areas with a very small population and very small number of deaths, these fluctuations can produce large changes in mortality rates from year to year. This certain amount of variation between rates that can be expected due to chance and is not indicative of true changes occurring in the population is referred to as *random variation*. One way of interpreting the magnitude of random variation between rates is by using *confidence intervals*.

The confidence interval calculated for a particular service area rate indicates the expected range of random variation in the estimate. Suppose the service area rate is being compared to the state rate. If the confidence interval for the state rate overlaps the calculated confidence interval for the service area, it can be inferred that the difference between the rates is probably due to random fluctuation (or chance) and there is probably no meaningful difference between the rates. On the other hand, if there is no overlap, it can be concluded that the difference between the rates is meaningful or statistically significant. The smaller the denominator used to calculate the rate for a particular service area, the larger the random fluctuation in the estimate, and the more likely that there may not actually be a meaningful difference between the rates. This is important to bear in mind during the comparison and interpretation of the rates.

An example of the use of confidence intervals1 is as follows:

	Infant Mortality Rate	Number of Deaths	Number of Live Births
STATE	6.9	731	105,823
Service Area X	6.8	179	26,186
Service Area Y	4.7	47	9,897

	95% Confidence Interval	
	Lower Limit	Upper Limit
STATE	6.4	7.4
Service Area X	5.8	7.8
Service Area Y	3.4	6.1

Since the confidence interval for the state overlaps the confidence interval for service area X, it can be concluded that service area X's infant mortality rate is not meaningfully different from the state rate. On the other hand, service area Y's infant mortality rate of 4.7 can be said to be significantly lower than the state rate since the confidence interval calculated for service area Y does not overlap with the confidence interval for the state. While confidence intervals are not a rigorous test of significance, they provide a reasonable guide to the interpretation of the magnitude of the random fluctuations in the difference between rates.

The Small Numbers Problem

The small numbers problem is a result of a small at-risk population. While there are clear advantages to using rates as a measure of frequency, there is a major limitation when the number of events (e.g., births, population) in the denominator is very small. To reduce this problem, data for six years was aggregated, whenever possible. However, even with such aggregation, the events number very few for some service areas. It is therefore advised that considerable caution be exercised in the interpretation of these rates, particularly in making comparisons. For example, in cases when the numerator of a multiple year period refers to a very small number of events (fewer than 20), the confidence interval is often too wide to make

1 *Lower limit* = p -1.96 * sqrt (pq/n). *Upper limit* = p +1.96 * sqrt (pq/n). *p* is the area rate. *n* is the number of births in the area. *q* is 1 – p.

meaningful comparisons. In these instances a standardized ratio can be computed instead of a confidence interval. A standardized ratio is the relationship between the observed number of events versus the expected number of events. To calculate the expected number of events, state rates are applied to the area denominator to generate an expected number of events if the area rate was the same as the state rate. The equation for the expected number of events is:

Area Denominator x State Rate = Expected Number of Events

A standardized ratio can then be calculated by dividing the observed number of events by the expected number and multiplying by 100. When the standardized ratio is greater than 200, your area may have a rate that is significantly higher than the state.

Primary Care Access Indicators

This section contains definitions for the types of indicators related to primary care access, with tables and charts for each indicator described.

Population Status

The population status indicators are defined as follows:

Elderly Population = $\frac{\text{Number of persons age 65 years and over}}{\text{Total population}} \times 100$

Children and Youth Population = $\frac{\text{Number of persons age 17 and below}}{\text{Total population}} \times 100$

Birth Rate for Adult Women = $\frac{\text{Number of births to women age 18 to 44}}{\text{Total number of women age 18 to 44}} \times 100$

Resident Population = Number of persons in each service area

Native Hawaiian population = Number of persons who have identified themselves as Native Hawaiian

Percentage of Native Hawaiians = $\frac{\text{Number of Native Hawaiians in each service area}}{\text{Total number of persons in each service area}} \times 100$

Hawaiian Population Figures Update from the U.S. Census Bureau

Due to the growing changes in the racial and ethnic makeup of the country and in order to collect data that would better reflect the diversity of the country's population, the U.S. Census Bureau modified the way they collected race data in the 2000 Census. Respondents were allowed to identify one or more races to indicate their racial identity. There were 15 check box response categories and three write-in areas on the Census 2000 questionnaire, compared with 16 check box response categories and two write-in areas for the 1990 Census. Consequently, data on race from the 2000 Census are not directly comparable with those from the 1990 Census and previous censuses due, in part, by allowing respondents the option to report more than one race. Due to the change, data on race can be presented using several different options. One option provides data about people who reported a race either "alone" or in "combination with one or more other races."

The 2000 Census reports that there were 80,137 people in the State of Hawai'i who identified themselves as "Native Hawaiian." This dataset reports only those residents who identified themselves as "Native Hawaiian" and did not indicate more than one race.

2000 U.S. Census Population Report:

Native Hawaiian Alone

	State of Hawai'i	Hawai'i County	City & County of Honolulu	Kaua'i County	Maui County
Total	80,137	14,461	49,267	4,935	11,410

Of the Native Hawaiian population living in Hawai'i, there were 239,655 who were identified as Hawaiian or part-Hawaiian. These numbers are listed below, as well as in chart form (see Chart 5 on page 13). These numbers are more indicative of the Native Hawaiian people living in the state of Hawai'i.

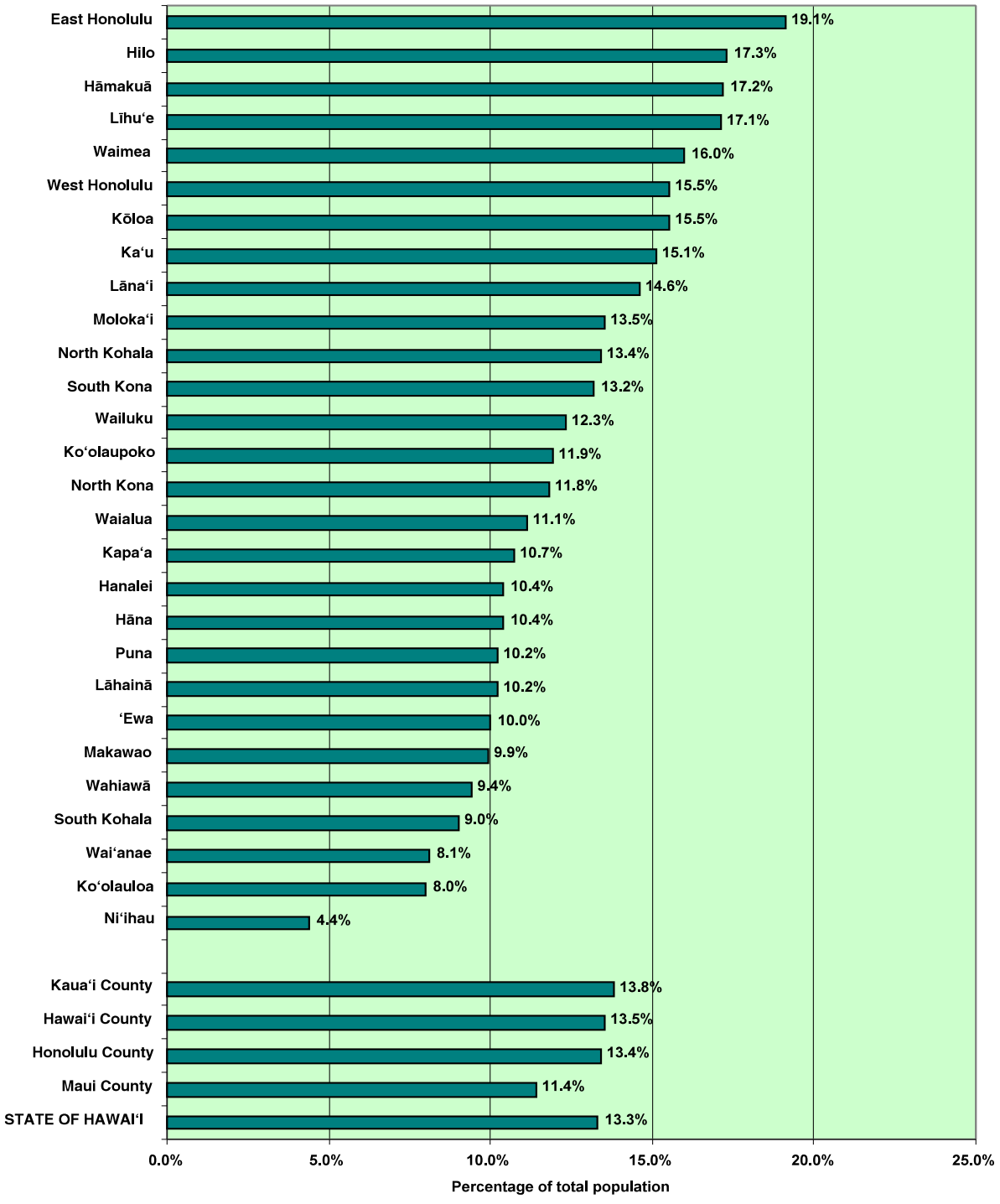
Native Hawaiian alone or in any combination with one or more of the other races

	State of Hawai'i	Hawai'i County	City & County of Honolulu	Kaua'i County	Maui County
Total	239,655	43,010	153,117	13,511	29,952

The U.S. Census Bureau who track the Native Hawaiian Population statewide released additional analysis of its 2000 census data. U.S. Census Bureau's Summary File 2 (SF2) provides a more accurate representation of Native Hawaiians living in Hawai'i. It takes into account both Native Hawaiian and part-native Hawaiians living in Hawai'i.

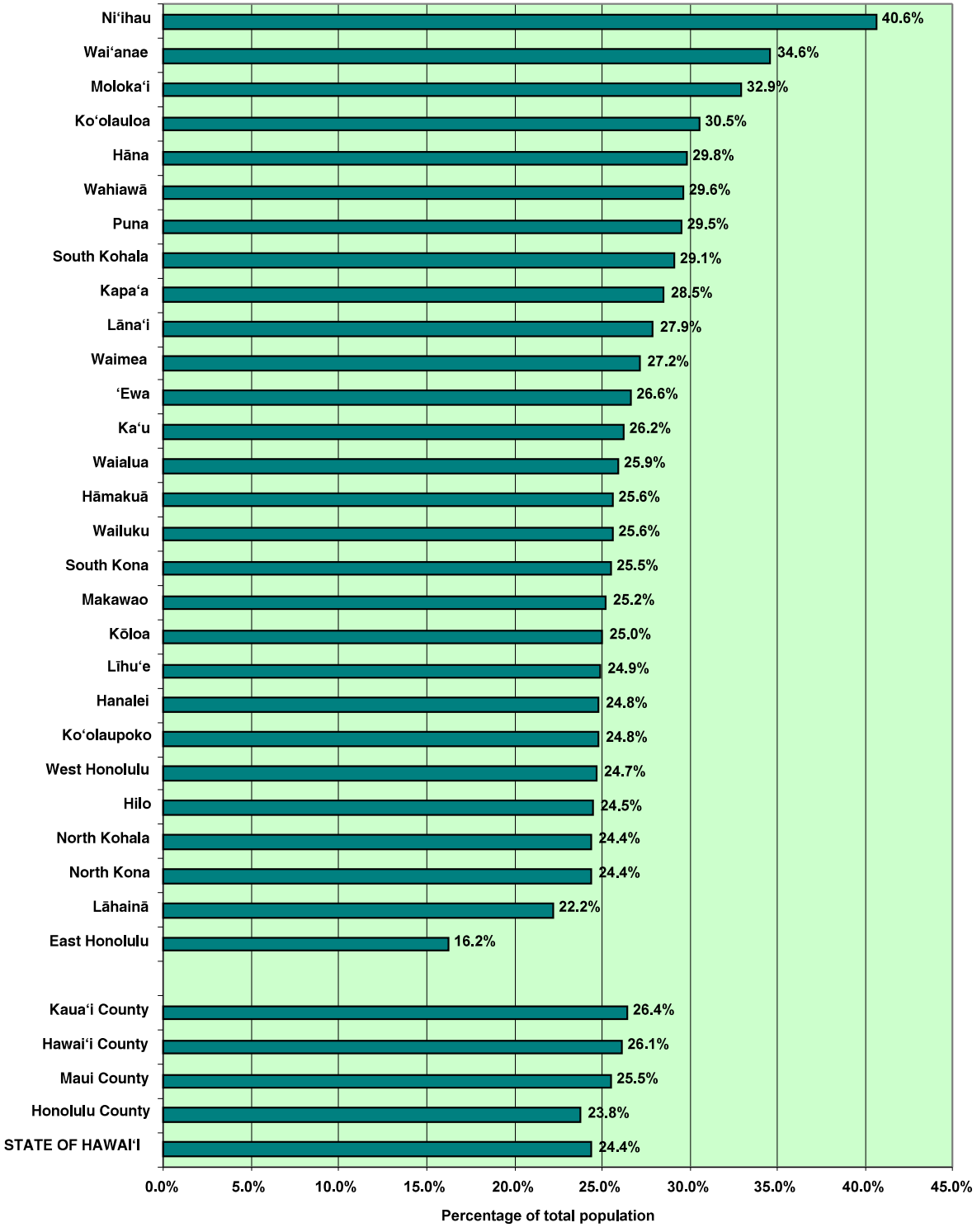
* The U.S. Census Bureau recognizes census tract 319, the residents of Kalaupapa, as Kalawao County and reports it among the more customarily known counties in the State. It is accepted practice in State of Hawai'i demographic data to include the Kalawao County data with Maui County. For purposes of our Data Book, Chart 5, page 13, we include this population within the Maui County service area.

Chart 1: Percentage of Population Age 65 Years and Over, 2000



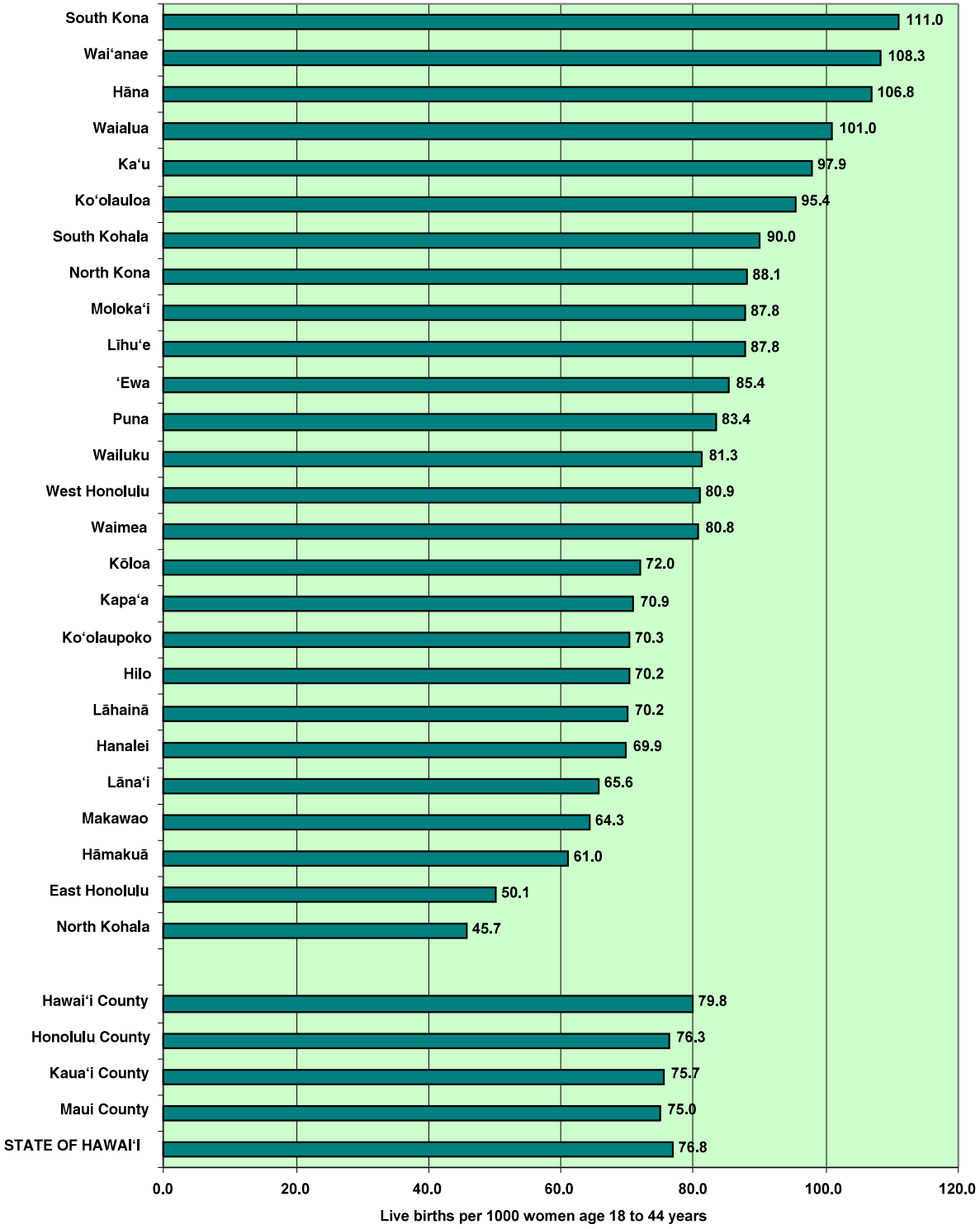
Source: U.S. Census Bureau, Census 2000.

Chart 2: Percentage of Population Age 17 and Below, 2000



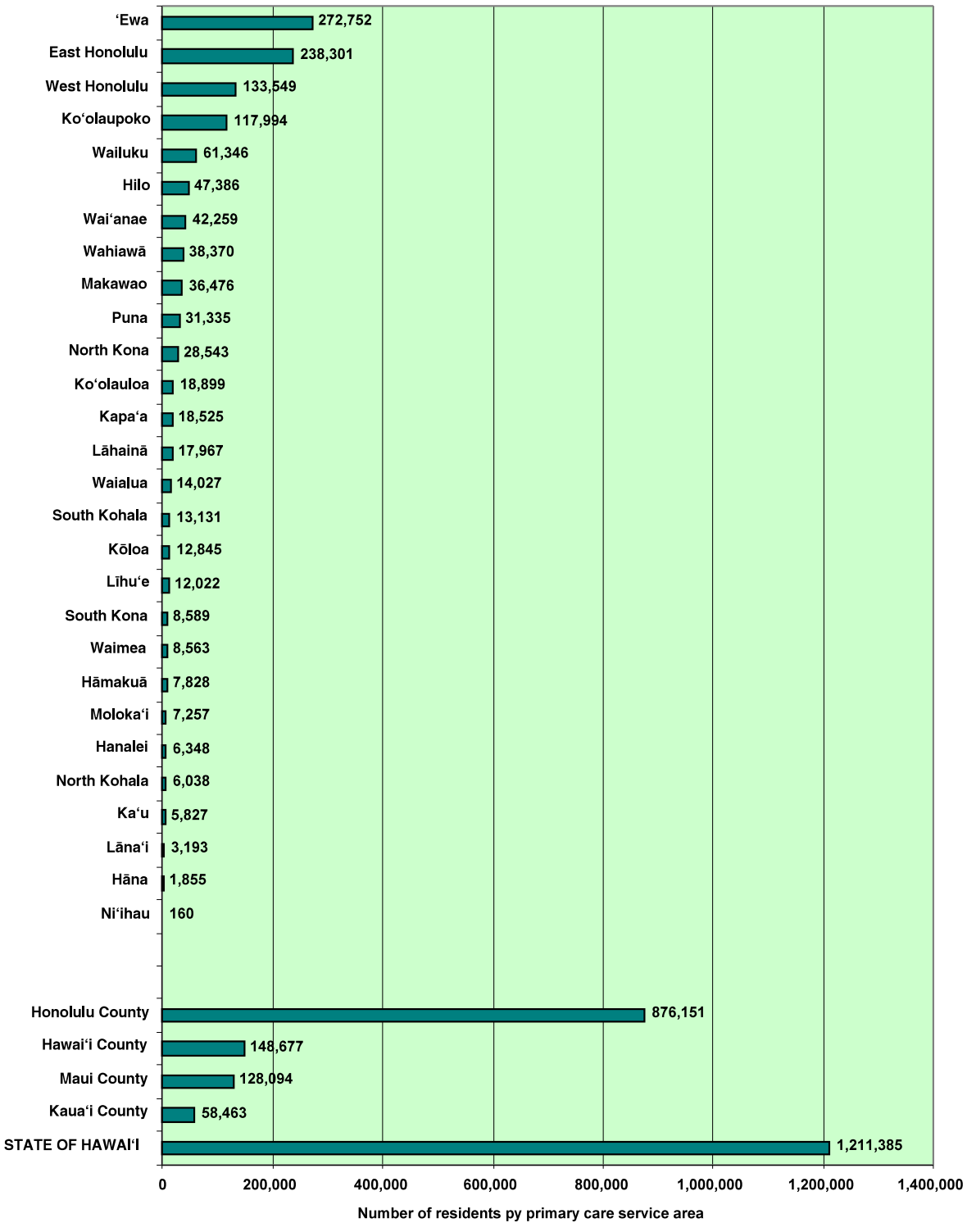
Source: U.S. Census Bureau, Census 2000.

Chart 3: Estimated Birth Rate of Women Age 18 to 44 Years, 2006



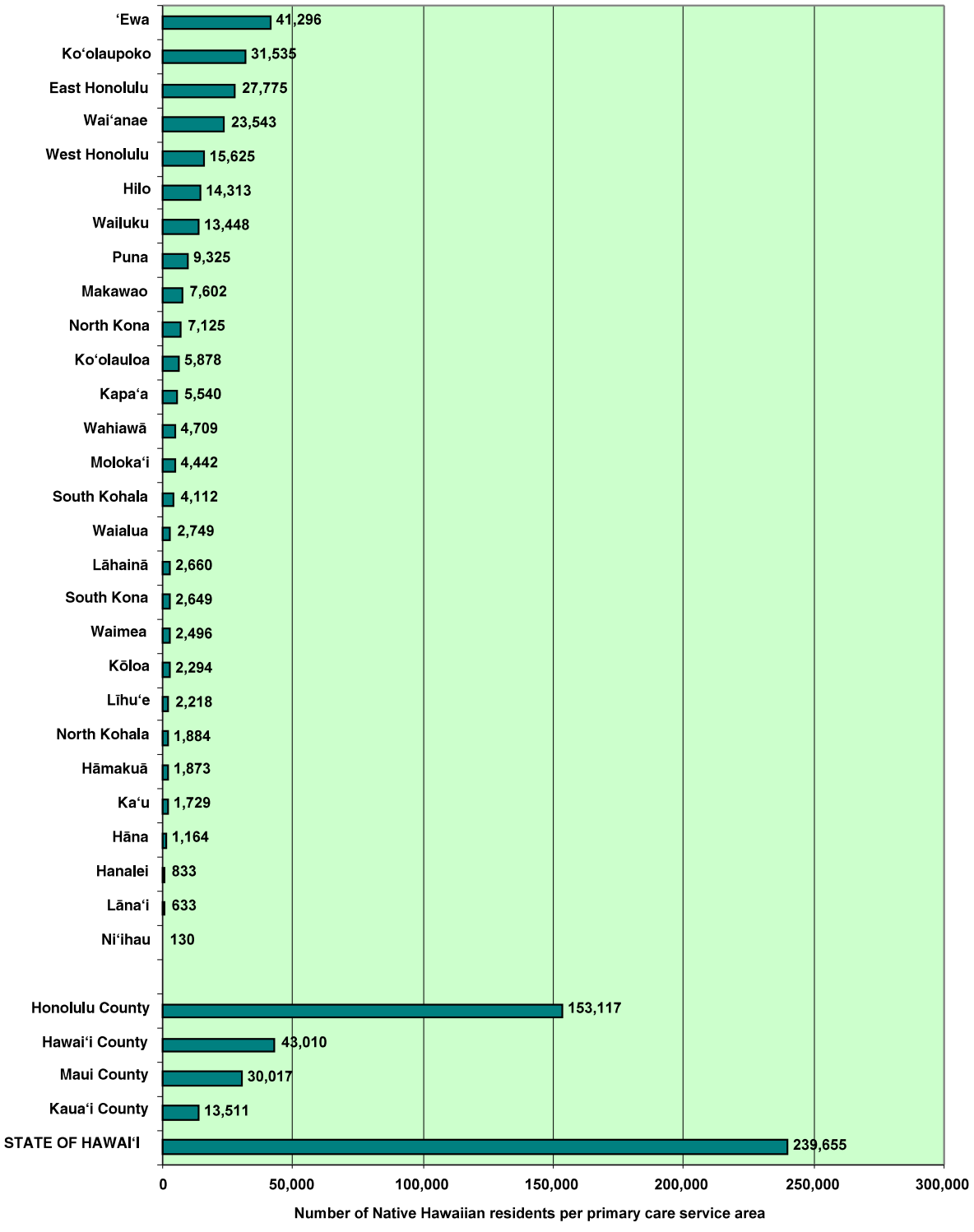
Source: State of Hawaiʻi, Department of Health, Office of Health Status Monitoring. U.S. Census Bureau, Census 2000.

Chart 4: Resident Population by Service Area, 2000



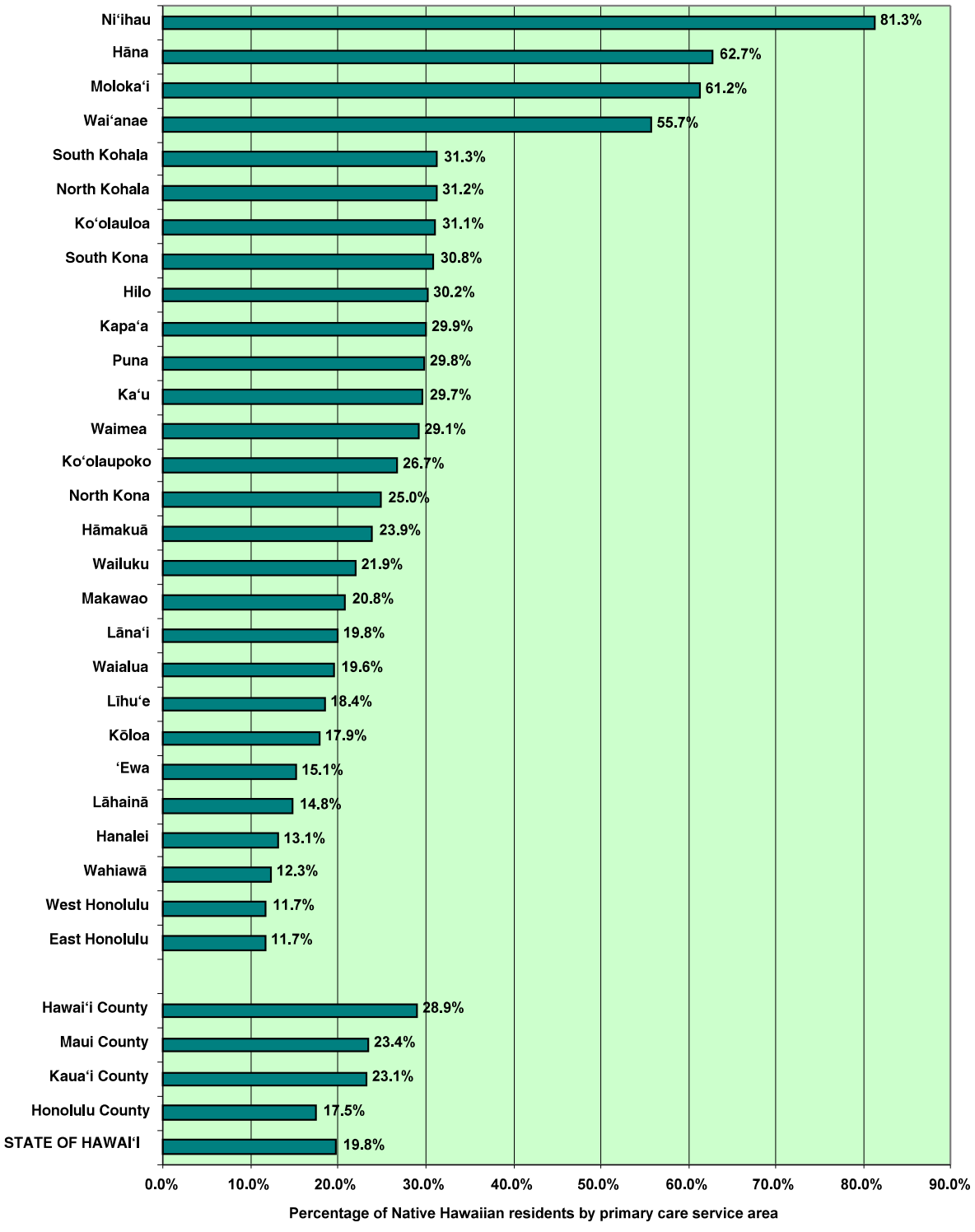
Source: U.S. Census Bureau, Census 2000.

Chart 5: Native Hawaiian Population by Service Area, 2000



Source: U.S. Census Bureau, Census 2000.

Chart 6: Percentage of Native Hawaiians by Service Area, 2000



Source: U.S. Census Bureau, Census 2000.

Health Status

The health status indicators are defined as follows:

Infant Mortality Rate (IMR)	=	$\frac{\text{Number of infant deaths}}{\text{Total number of live births}}$	× 1,000
Less than Adequate Prenatal Care Utilization *	=	$\frac{\text{Number of births to mothers who received less than adequate prenatal care as measured by the Adequacy of Prenatal Care Utilization Index}}{\text{Total number of live births}}$	× 100
Low Birth Weight (LBW) Birth Rate	=	$\frac{\text{Number of low birthweight births (under 2,500 grams)}}{\text{Total number of live births}}$	× 100
Teen Birth Rate	=	$\frac{\text{Number of births to mothers age 17 years and younger}}{\text{Total number of live births}}$	× 100

* Less than Adequate Prenatal Care Utilization

Prenatal care which is defined by a score of either “inadequate,” or “intermediate” as calculated by the Adequacy of Prenatal Care Utilization (APNCU) Index. The APNCU is a measure of prenatal care utilization which combines the month of pregnancy prenatal care begun with the number of prenatal visits. Rates are classified as “adequate plus,” “adequate,” “intermediate,” or “inadequate.”

Traditionally, the time of initiation for prenatal care utilization was used to determine the adequacy of prenatal care. Adequacy of prenatal care is determined by the month or trimester of the first prenatal care visit, generally first trimester. This measure provides information on the time a woman entered the health care system, but it does not provide information on the degree of prenatal care usage. This measure is based on the assumption that those women who entered prenatal care early in their pregnancy are exposed to the greater potential of access to prenatal care and thus probably receive adequate prenatal care. The general interpretation of this measure is that those who enter prenatal care during the first trimester of pregnancy receive adequate prenatal care. Despite the short comings, the first trimester entry measure is the most commonly used method by local, state, and national agencies to determine the adequacy of prenatal care utilization. This measure is the required reporting measurement methodology for many federal reports on prenatal care. It is also the standard reporting measurement tool used by the Hawai‘i State Department of Health for decades

In 1994, Milton Kotelchuck proposed the Adequacy of Prenatal Utilization Index (APNCU), more commonly referred to as the "Kotelchuck Index." The APNCU Index combines two separate indices: the "adequacy of initiation of prenatal care," information on the adequacy of initiation of prenatal care (month care began) and the "adequacy of received services," (number of visits based on gestational age of the child) to characterize adequacy of pregnancy-related health services provided to an expectant mother between conception and delivery. The APNCU Index compares the number of prenatal care visits to the number of expected visits, which is derived from the complete American College of Obstetricians and Gynecologist (ACOG) visitation standards across all gestational ages. The recommended number of visits is then adjusted according to gestational age. A ratio of actual/expected visits is calculated. The APNCU Index is a sum of these two indices: adequacy of initiation and adequacy of received services.

The Adequacy of Prenatal Utilization Index offers a more accurate and comprehensive set of measures of prenatal care utilization. The APNCU Index is the prenatal care utilization index now being actively supported by the Maternal and Child Health Bureau (MCHB), DHHS. Consequently, it is the index which the Family Health Services Division (FHSD) and other Title-V agencies are now required to use in their reporting.

A discussion of the APNCU has been published by, Milton Kotelchuck, "An Evaluation of the Kessner Adequacy of Prenatal Care Index and a Proposed Adequacy of Prenatal Care Utilization Index." *American Journal of Public Health*. vol. 84. no. 9. (September 1994): pp. 1414-1420.

Vital Statistics Data

The tabulations for Chart 7 through Chart 10 were based on data from the Office of Health Status Monitoring, Hawai'i Department of Health, Birth Certificate data.

The Birth Certificate data includes characteristics about the infant such as date of birth, age, gender, race/ethnicity, place of birth, birthweight, weeks of gestation; and demographic information about the parents such as age, race/ethnicity, marital status, maternal and paternal education, place of residence; medical and health information such as prenatal care, number of prenatal visits, method of delivery, congenital anomalies, medical risks, obstetric procedures, complications.

The Family Health Services Division in collaboration with the Office of Health Status Monitoring have implemented a comprehensive statewide birth certificate data quality improvement initiative. Specifications for collecting and editing the certificates of birth were implemented, written policies and procedures concerning the recording and reporting of birth certificate data were established, standardized statewide training for health care personnel who have the responsibility of recording and reporting of birth certificate data are conducted annually. Data quality procedures include range of value checks, internal consistency edits, mandatory data entry fields, and checks for consistency in trends over time. These efforts have been done to ensure the reliability and validity of the data.

Healthy People 2010

In Charts 7 through 9, the Healthy People 2010 objectives for infant mortality rate, inadequate prenatal care birth rate, and low birth rate were included in our bar graph analysis. These were taken from the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2010*.

Healthy People 2010 profiles the Nation's health objectives. It identifies objectives to improve the Nation's health, and sets measurable targets to monitor progress toward its goals. There are 467 objectives in 28 focus areas.

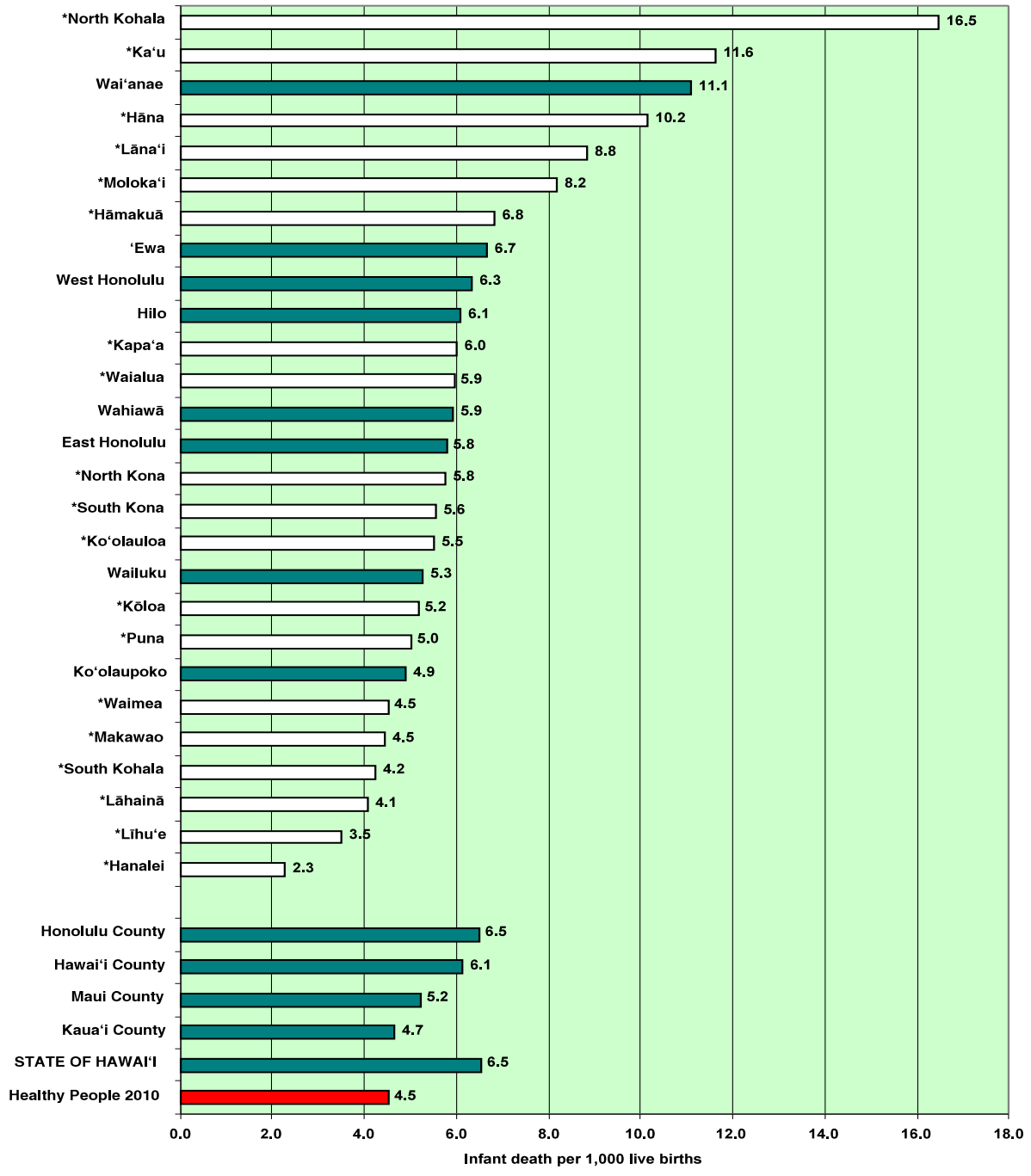
Table 1: Infant Mortality, 2001-2006

Service Area	Number of Live Births	Number of Infant Deaths	Infant Mortality Rate (IMR) *	95% Confidence Interval	
				Lower Limit	Upper Limit
State	107,993	705	6.5	6.0	7.0
Honolulu	78,532	509	6.5	5.9	7.0
East Honolulu	14,013	81	5.8	4.5	7.0
West Honolulu	13,080	83	6.3	5.0	7.7
ʻEwa	27,323	182	6.7	5.7	7.6
Wahiawā	4,899	29	5.9	3.8	8.1
Waiʻanae	5,407	60	11.1	8.3	13.9
Waialua	1,682	10	5.9	—	—
Koʻolauloa	2,178	12	5.5	—	—
Koʻolaupoko	9,790	48	4.9	3.5	6.3
Hawaiʻi	13,024	80	6.1	4.8	7.5
Hilo	3,777	23	6.1	3.6	8.6
Puna	2,797	14	5.0	—	—
Kaʻu	516	6	11.6	—	—
South Kona	899	5	5.6	—	—
North Kona	2,602	15	5.8	—	—
South Kohala	1,415	6	4.2	—	—
North Kohala	425	7	16.5	—	—
Hāmākua	585	4	6.8	—	—
Maui	11,335	59	5.2	3.9	6.5
Hāna	197	2	10.2	—	—
Makawao	2,694	12	4.5	—	—
Wailuku	5,887	31	5.3	3.4	7.1
Lāhainā	1,715	7	4.1	—	—
Lānaʻi	226	2	8.9	—	—
Molokaʻi	611	5	8.2	—	—
Kauaʻi	4,715	22	4.7	2.7	6.6
Hanalei	439	1	2.3	—	—
Kapaʻa	1,496	9	6.0	—	—
Līhuʻe	1,143	4	3.5	—	—
Kōloa	967	5	5.2	—	—
Waimea	666	3	4.5	—	—
Niʻihau	1	0	—	—	—

Source: State of Hawaiʻi, Department of Health, Office of Health Status Monitoring.

No confidence intervals were computed when the numerators were less than 20. Instead, standardized ratios were computed and found to be less than the standardized ratio of 200, implying that the rates were not significantly higher than those of the State of Hawaiʻi. See Family Health Outcomes project (FHOP), Guidelines for Using Federal Data Templates with Small Numbers (May 1, 1997). * Some data is too small to calculate reliable measures. Unstable measures are not useful in making decisions.

Chart 7: Infant Mortality Rate, 2001-2006



Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring.

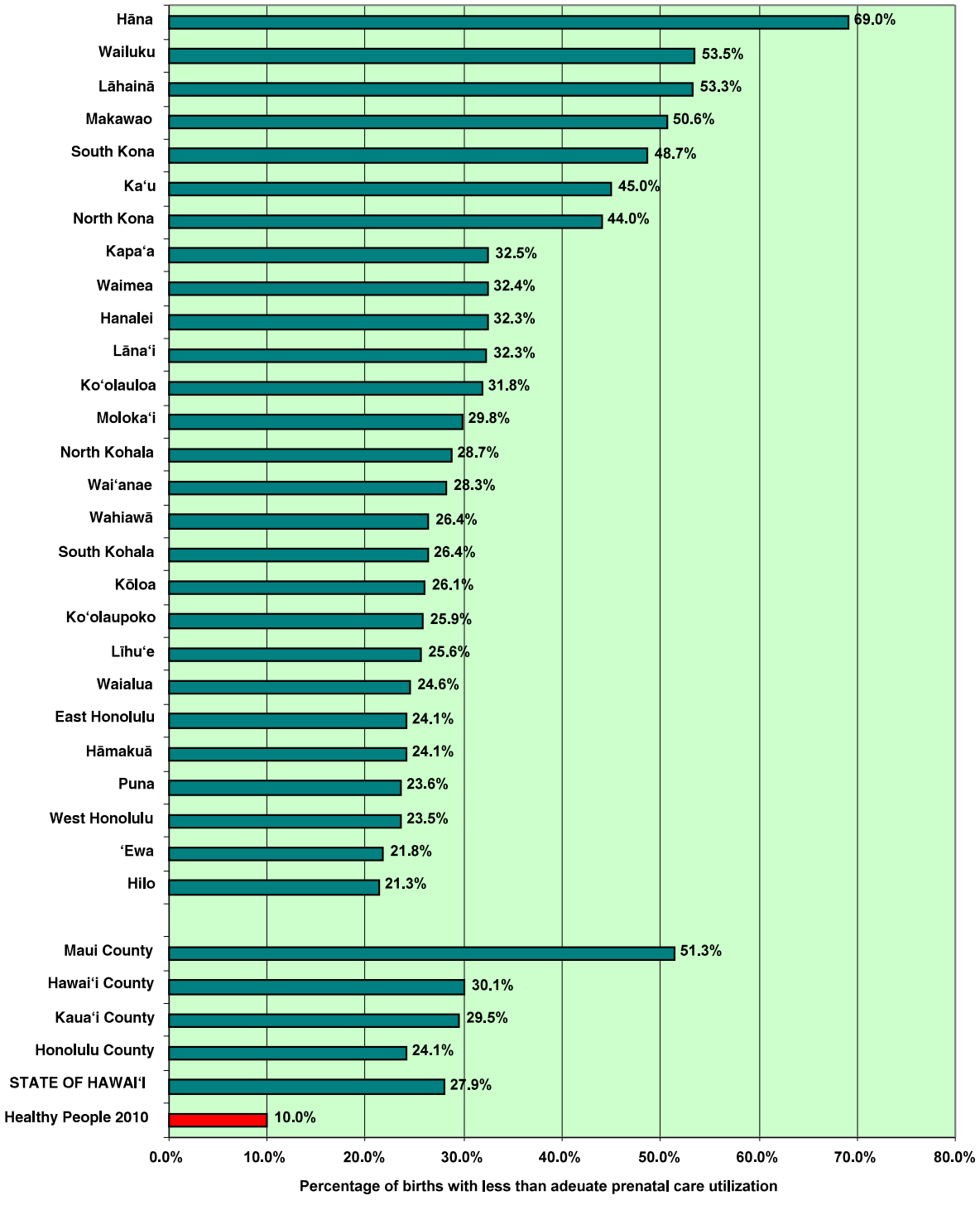
* Standardized ratios were computed and found to be less than the standardized ratio of 200, implying that the rates were not significantly higher than those of the State of Hawai'i. See Family Health Outcomes project (FHOP), Guidelines for Using Federal Data Templates with Small Numbers (May 1, 1997). However, to avoid misinterpretations these areas are low-lighted as a warning. Low-lighted bars should **NOT** be compared to colored bars. Refer to discussion, "The Small Numbers Problem," on page 6.

Table 2: Less Than Adequate Prenatal Care Utilization Births, 2001-2006

Service Area	Number of Live Births	Less than Adequate Prenatal Care Utilization Births	Percentage of Births with Less than Adequate Prenatal Care Utilization	95% Confidence Interval	
				Lower Limit	Upper Limit
State	107,993	30,175	27.9	27.7	28.2
Honolulu	78,532	18,919	24.1	23.8	24.4
East Honolulu	14,013	3,382	24.1	23.4	24.8
West Honolulu	13,080	3,078	23.5	22.8	24.3
ʻEwa	27,323	5,946	21.8	21.3	22.3
Wahiawā	4,899	1,294	26.4	25.2	27.6
Waiʻanae	5,407	1,530	28.3	27.1	29.5
Waialua	1,682	413	24.6	22.5	26.6
Koʻolauloa	2,178	693	31.8	29.9	33.8
Koʻolaupoko	9,790	2,537	25.9	25.0	26.8
Hawaiʻi	13,024	3,918	30.1	29.3	30.9
Hilo	3,777	805	21.3	20.0	22.6
Puna	2,797	659	23.6	22.0	25.1
Kaʻu	516	232	45.0	40.7	49.3
South Kona	899	438	48.7	45.5	52.0
North Kona	2,602	1,145	44.0	42.1	45.9
South Kohala	1,415	373	26.4	24.1	28.7
North Kohala	425	122	28.7	24.4	33.0
Hāmākua	585	141	24.1	20.6	27.6
Maui	11,335	5,817	51.3	50.4	52.2
Hāna	197	136	69.0	62.6	75.5
Makawao	2,694	1,363	50.6	48.7	52.5
Wailuku	5,887	3,148	53.5	52.2	54.7
Lāhainā	1,715	914	53.3	50.9	55.7
Lānaʻi	226	73	32.3	26.2	38.4
Molokaʻi	611	182	29.8	26.2	33.4
Kauaʻi	4,715	1,391	29.5	28.2	30.8
Hanalei	439	142	32.3	28.0	36.7
Kapaʻa	1,496	486	32.5	30.1	34.9
Līhuʻe	1,143	293	25.6	23.1	28.2
Kōloa	967	252	26.1	23.3	28.8
Waimea	666	216	32.4	28.9	36.0
Niʻihau	1	1	—	—	—

Source: State of Hawaiʻi, Department of Health, Office of Health Status Monitoring.

Chart 8: Percentage of Births with Less Than Adequate Prenatal Care Utilization, 2001-2006



Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring.

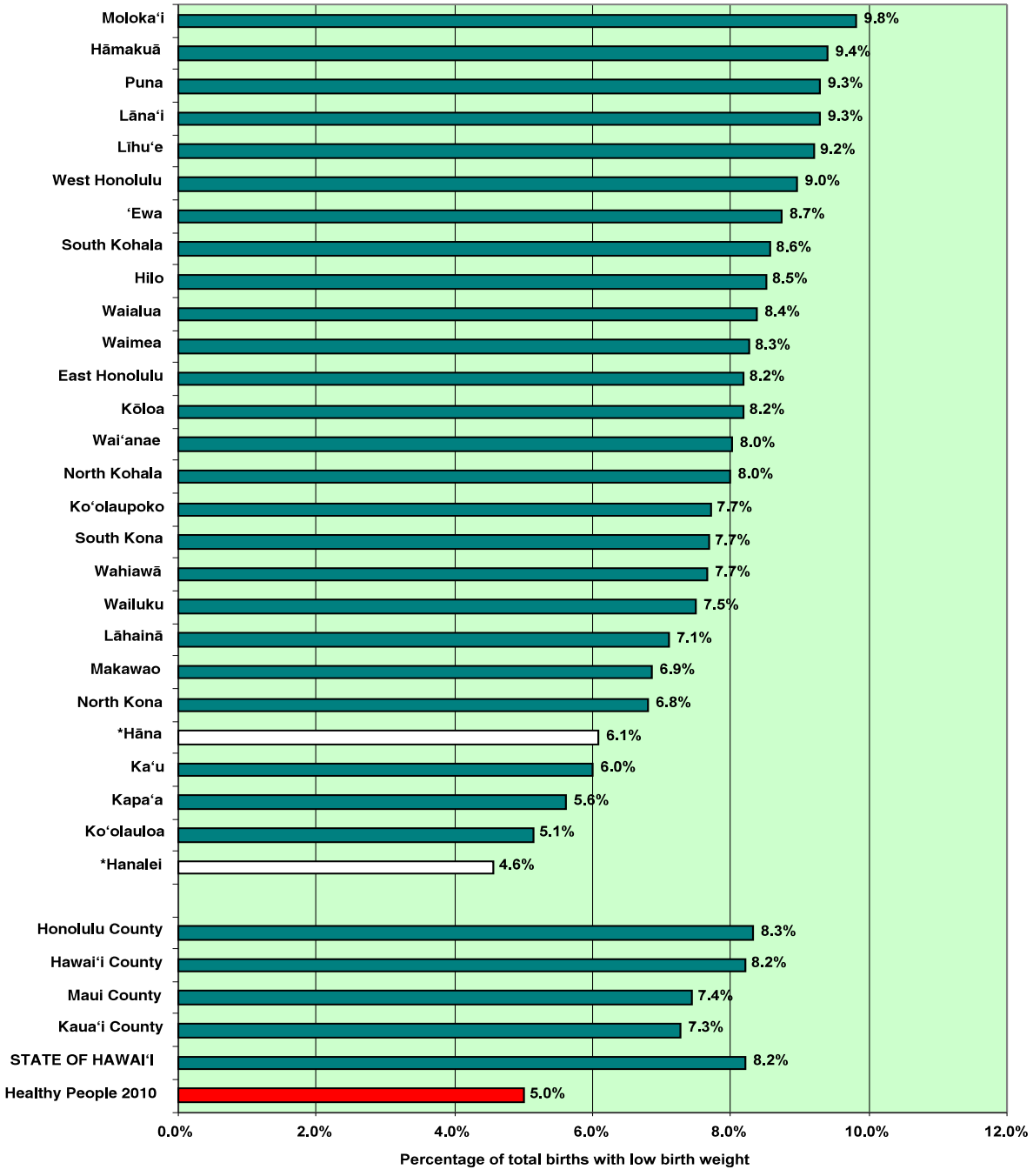
Table 3: Low Birth Weight Births, 2001-2006

Service Area	Number of Live Births	Number of Low Birth Weight Births	Percent of Low Birth Weight Births	95% Confidence Interval	
				Lower Limit	Upper Limit
State	107,993	8,876	8.2	8.0	8.4
Honolulu	78,532	6,538	8.3	8.1	8.5
East Honolulu	14,013	1,145	8.2	7.7	8.6
West Honolulu	13,080	1,172	9.0	8.5	9.5
ʻEwa	27,323	2,389	8.7	8.4	9.1
Wahiawā	4,899	375	7.7	6.9	8.4
Waiʻanae	5,407	434	8.0	7.3	8.8
Waialua	1,682	141	8.4	7.1	9.7
Koʻolauloa	2,178	112	5.1	4.2	6.1
Koʻolaupoko	9,790	754	7.7	7.2	8.2
Hawaiʻi	13,024	1,068	8.2	7.7	8.7
Hilo	3,777	321	8.5	7.6	9.4
Puna	2,797	260	9.3	8.2	10.4
Kaʻu	516	31	6.0	4.0	8.1
South Kona	899	69	7.7	5.9	9.4
North Kona	2,602	177	6.8	5.8	7.8
South Kohala	1,415	121	8.6	7.1	10.0
North Kohala	425	34	8.0	5.4	10.6
Hāmākua	585	55	9.4	7.0	11.8
Maui	11,335	841	7.1	6.6	7.6
Hāna	197	12	6.1	—	—
Makawao	2,694	185	6.9	5.9	7.8
Wailuku	5,887	441	7.5	6.8	8.2
Lāhainā	1,715	122	7.1	5.9	8.3
Lānaʻi	226	21	9.3	5.5	13.1
Molokaʻi	611	60	9.8	7.5	12.2
Kauaʻi	4,715	343	7.3	6.6	8.0
Hanalei	439	20	4.6	—	—
Kapaʻa	1,496	84	5.6	4.4	6.8
Līhuʻe	1,143	105	9.2	7.5	10.9
Kōloa	967	79	8.2	6.4	9.9
Waimea	666	55	8.3	6.2	10.3
Niʻihau	1	0	—	—	—

Source: State of Hawaiʻi, Department of Health, Office of Health Status Monitoring.

No confidence intervals were computed when the numerators were less than 20. Instead, standardized ratios were computed and found to be less than the standardized ratio of 200, implying that the rates were not significantly higher than those of the State of Hawaiʻi. See Family Health Outcomes project (FHOP), Guidelines for Using Federal Data Templates with Small Numbers (May 1, 1997).

Chart 9: Percentage of Births with Low Birth Weight, 2001-2006



Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring.

* Standardized ratios were computed and found to be less than the standardized ratio of 200, implying that the rates were not significantly higher than those of the State of Hawai'i. See Family Health Outcomes project (FHOP), Guidelines for Using Federal Data Templates with Small Numbers (May 1, 1997). However, to avoid misinterpretations these areas are low-lighted as a warning. Low-lighted bars should **NOT** be compared to colored bars. Refer to discussion, "The Small Numbers Problem," on page 6.

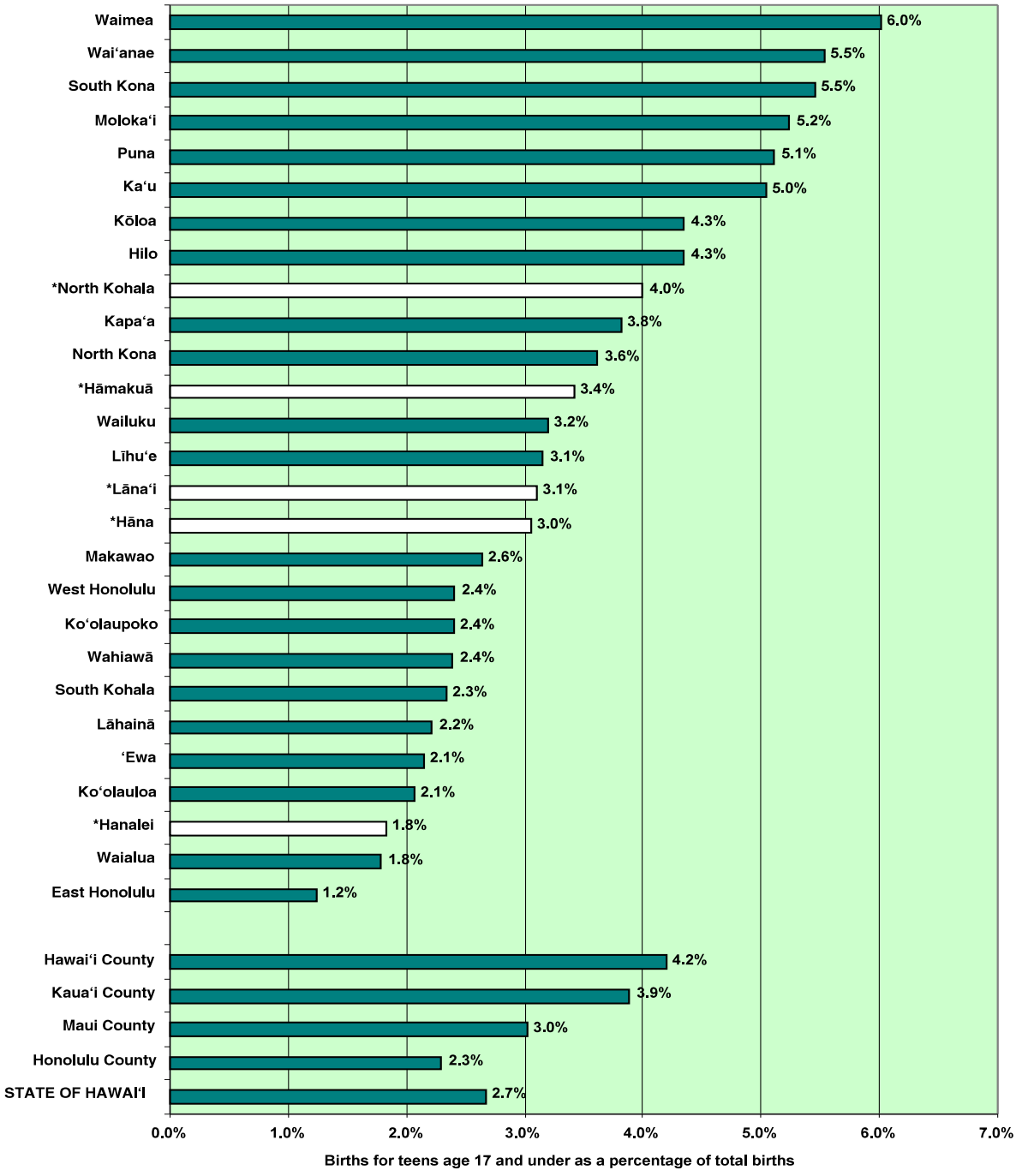
Table 4: Births to Teens Aged 10 to 17 Years, 2001-2006

Service Area	Number of Live Births	Number of Births to Teens	Percentage of Births to Teens *	95% Confidence Interval	
				Lower Limit	Upper Limit
State	107,993	2,877	2.7	2.6	2.8
Honolulu	78,532	1,802	2.3	2.2	2.4
East Honolulu	14,013	173	1.2	1.1	1.4
West Honolulu	13,080	315	2.4	2.1	2.7
ʻEwa	27,323	586	2.1	2.0	2.3
Wahiawā	4,899	117	2.4	2.0	2.8
Waiʻanae	5,407	299	5.5	4.9	6.1
Waialua	1,682	30	1.8	1.2	2.4
Koʻolauloa	2,178	45	2.1	1.5	2.7
Koʻolaupoko	9,790	235	2.4	2.1	2.7
Hawaiʻi	13,024	546	4.2	3.8	4.5
Hilo	3,777	164	4.3	3.7	5.0
Puna	2,797	143	5.1	4.3	5.9
Kaʻu	516	26	5.0	3.2	6.9
South Kona	899	49	5.5	4.0	6.9
North Kona	2,602	94	3.6	2.9	4.3
South Kohala	1,415	33	2.3	1.5	3.1
North Kohala	425	17	4.0	—	—
Hāmākua	585	20	3.4	—	—
Maui	11,335	342	3.0	2.7	3.3
Hāna	197	6	3.0	—	—
Makawao	2,694	71	2.6	2.0	3.2
Wailuku	5,887	188	3.2	2.7	3.6
Lāhainā	1,715	38	2.2	1.5	2.9
Lānaʻi	226	7	3.1	—	—
Molokaʻi	611	32	5.2	3.5	7.0
Kauaʻi	4,715	183	3.9	3.3	4.4
Hanalei	439	8	1.8	—	—
Kapaʻa	1,496	57	3.8	2.8	4.8
Līhuʻe	1,143	36	3.2	2.1	4.2
Kōloa	967	42	4.3	3.1	5.6
Waimea	666	40	6.0	4.2	7.8
Niʻihau	1	0	—	—	—

Source: State of Hawaiʻi, Department of Health, Office of Health Status Monitoring.

No confidence intervals were computed when the numerators were less than 20. Instead, standardized ratios were computed and found to be less than the standardized ratio of 200, implying that the rates were not significantly higher than those of the State of Hawaiʻi. See Family Health Outcomes project (FHOP), Guidelines for Using Federal Data Templates with Small Numbers (May 1, 1997). * Some data is too small to calculate reliable measures. Unstable measures are not useful in making decisions.

Chart 10: Percentage of Teen Births*, 2001-2006



Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring.

* Standardized ratios were computed and found to be less than the standardized ratio of 200, implying that the rates were not significantly higher than those of the State of Hawai'i. See Family Health Outcomes project (FHOP), Guidelines for Using Federal Data Templates with Small Numbers (May 1, 1997). However, to avoid misinterpretations these areas are low-lighted as a warning. Low-lighted bars should **NOT** be compared to colored bars. Refer to discussion, "The Small Numbers Problem," on page 6.

Socio-Economic Status

The socio-economic status indicators are defined as follows:

Per Capita Income = Annual income (U.S. dollars) per person

Percentage of Population Below 100% (or 200%) of Poverty = $\frac{\text{Number of persons with incomes below 100 percent (or 200 percent) of the federally-defined poverty level}}{\text{Total population}} \times 100$

Civilian Unemployment Rate = $\frac{\text{Number of persons unemployed}}{\text{Total civilian labor force}} \times 100$

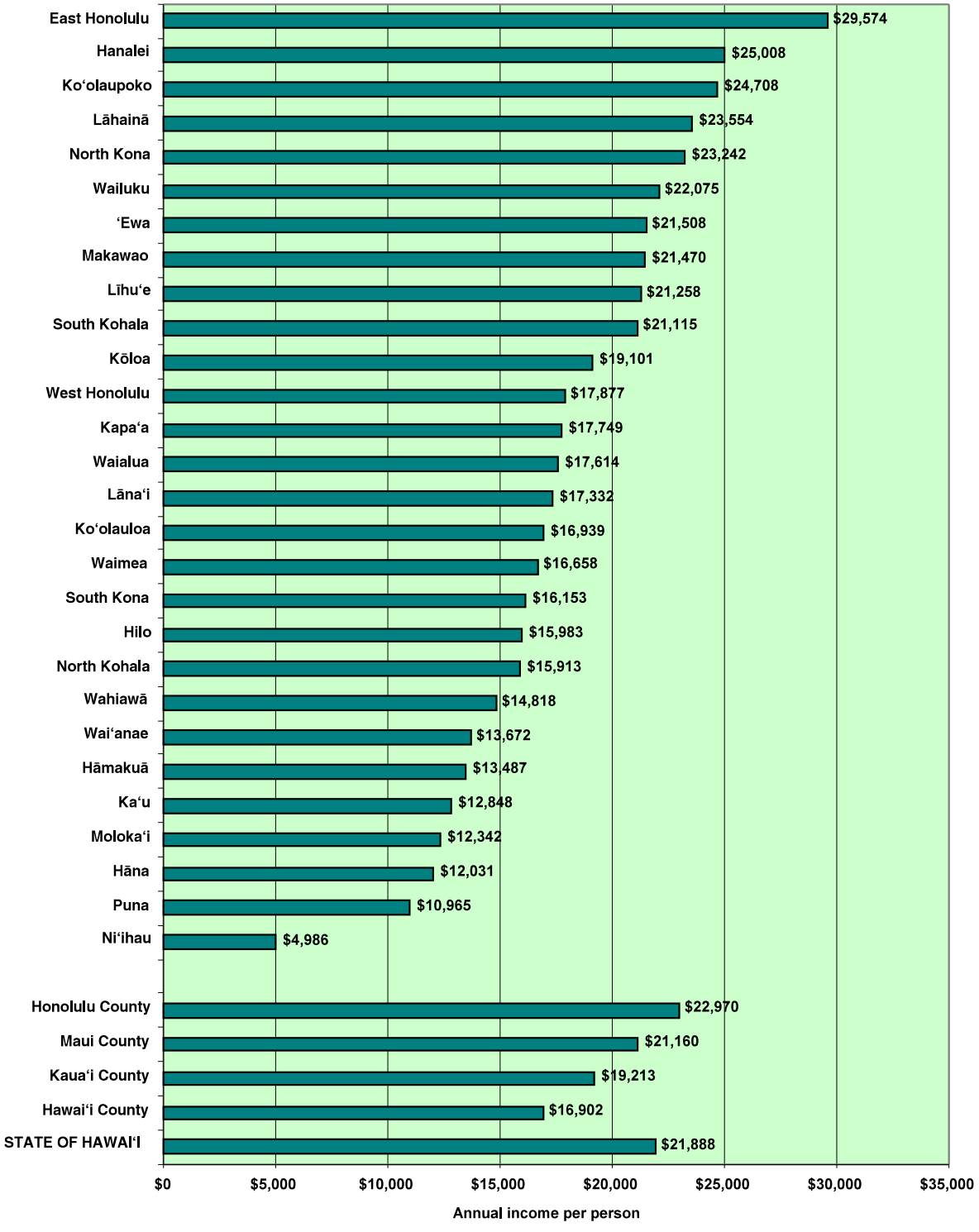
Percentage of Adults without a High School Diploma = $\frac{\text{Number of persons 18 years and over with no high school diploma}}{\text{Total population age 18 years and over}} \times 100$

Percentage of Households Receiving Public Assistance = $\frac{\text{Number of households receiving financial aid under Temporary Assistance to Needy Families (TANF)}}{\text{Total number of households}} \times 100$

Percentage of Households Receiving Food Stamps = $\frac{\text{Number of households receiving food stamps}}{\text{Total number of households}} \times 100$

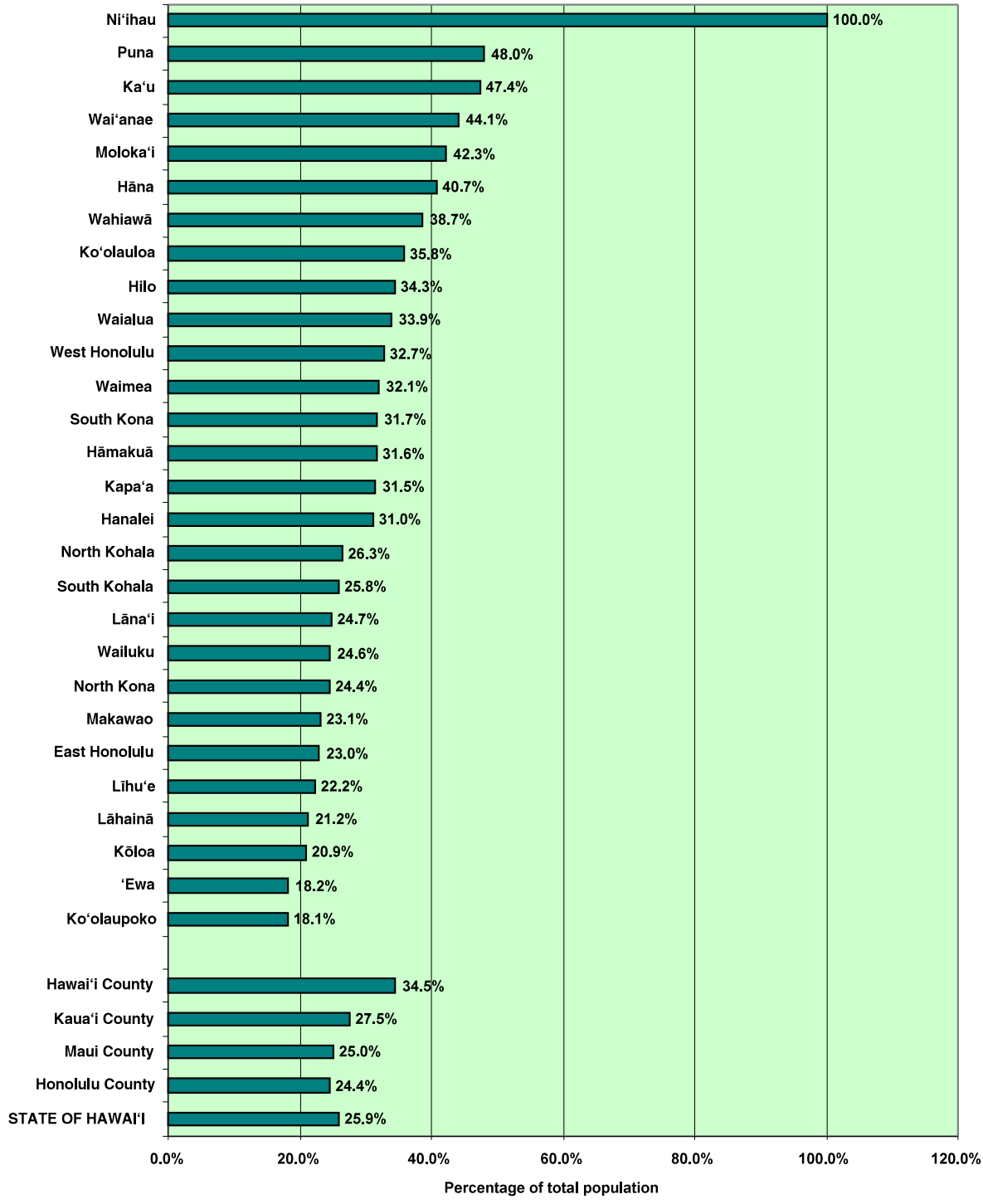
Data from the Research and Statistics Office, Hawai‘i Department of Labor and Industrial Relations and the Information Systems Office, Hawai‘i Department of Human Services were used for the socio-economic indicators shown in Chart 12 through Chart 18.

Chart 11: Per Capita Income, 1998



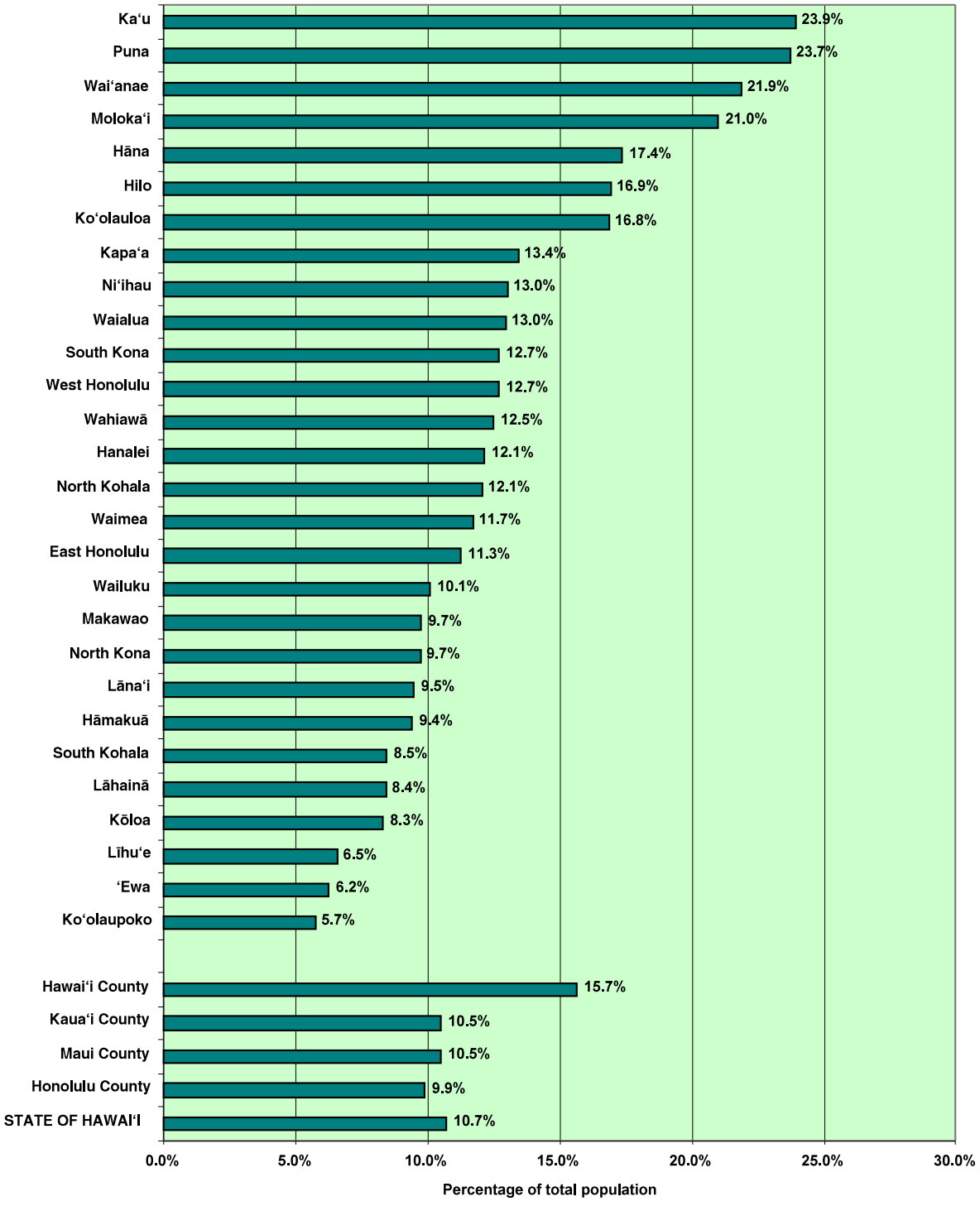
Source: Claritas.

Chart 12: Percentage of Population Below 200% of Federal Poverty Level, 1999



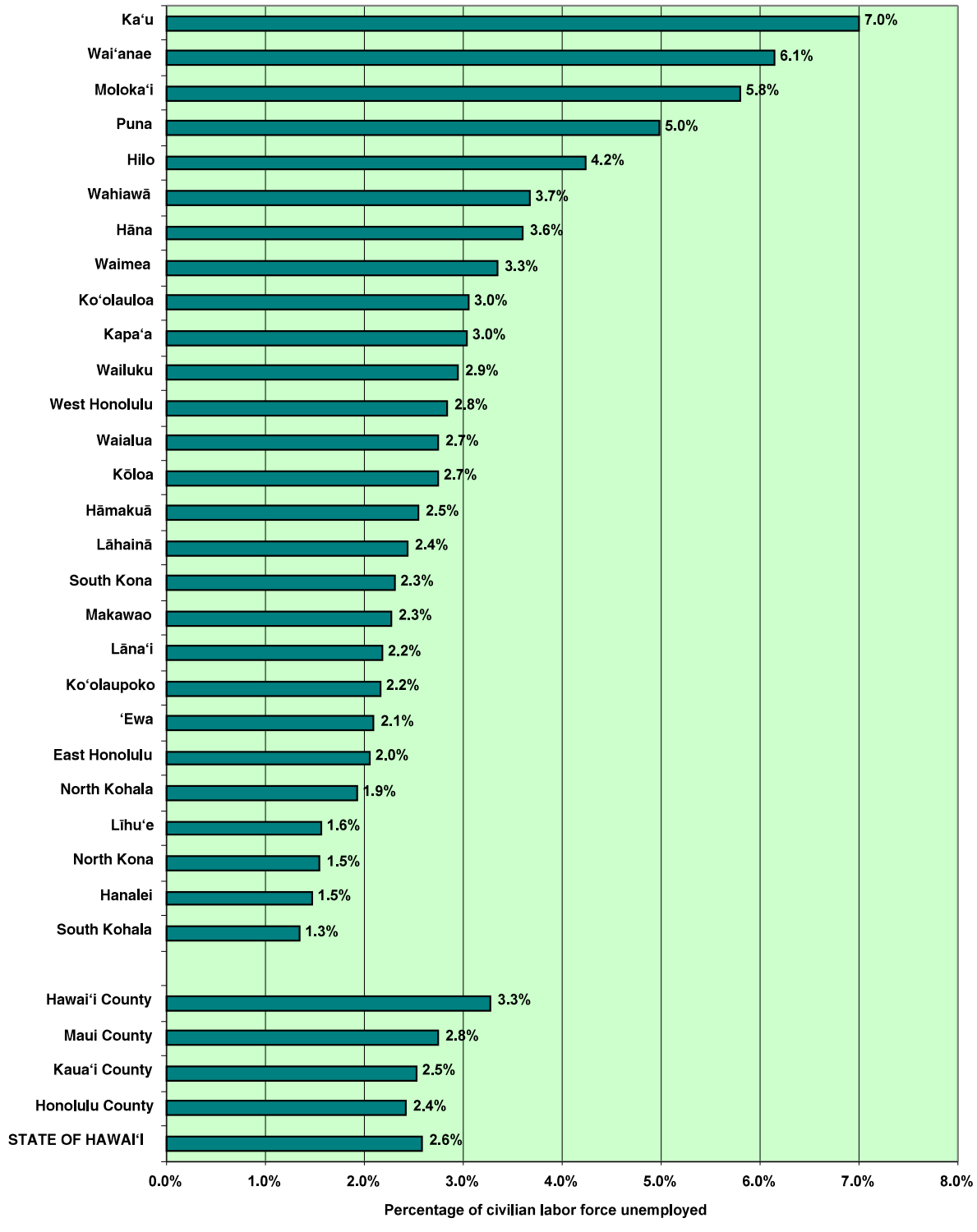
Source: U.S. Census Bureau, Census 2000.

Chart 13: Percentage of Population Below 100% of Federal Poverty Level, 1999



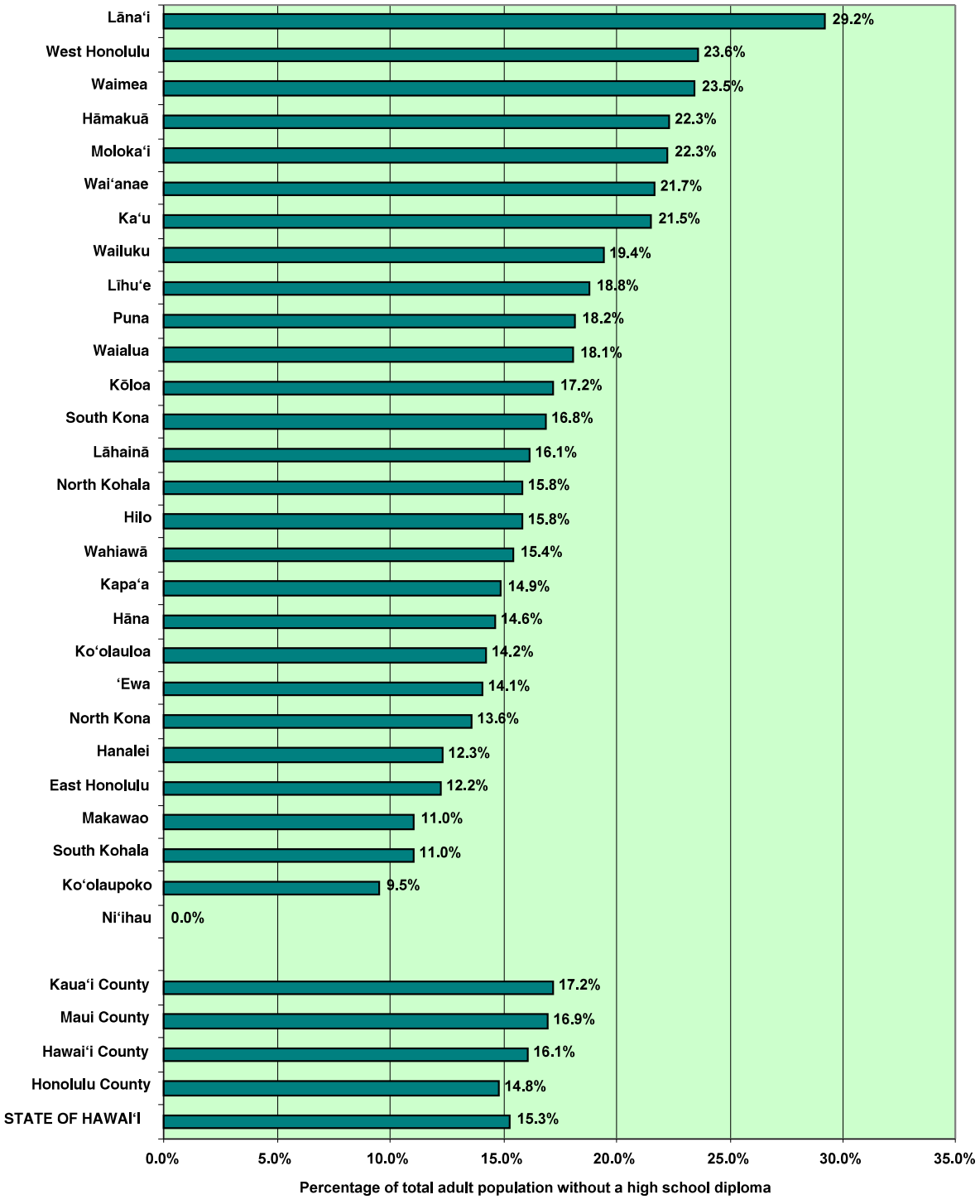
Source: U.S. Census Bureau, Census 2000.

Chart 14: Unemployment Rate, 2007



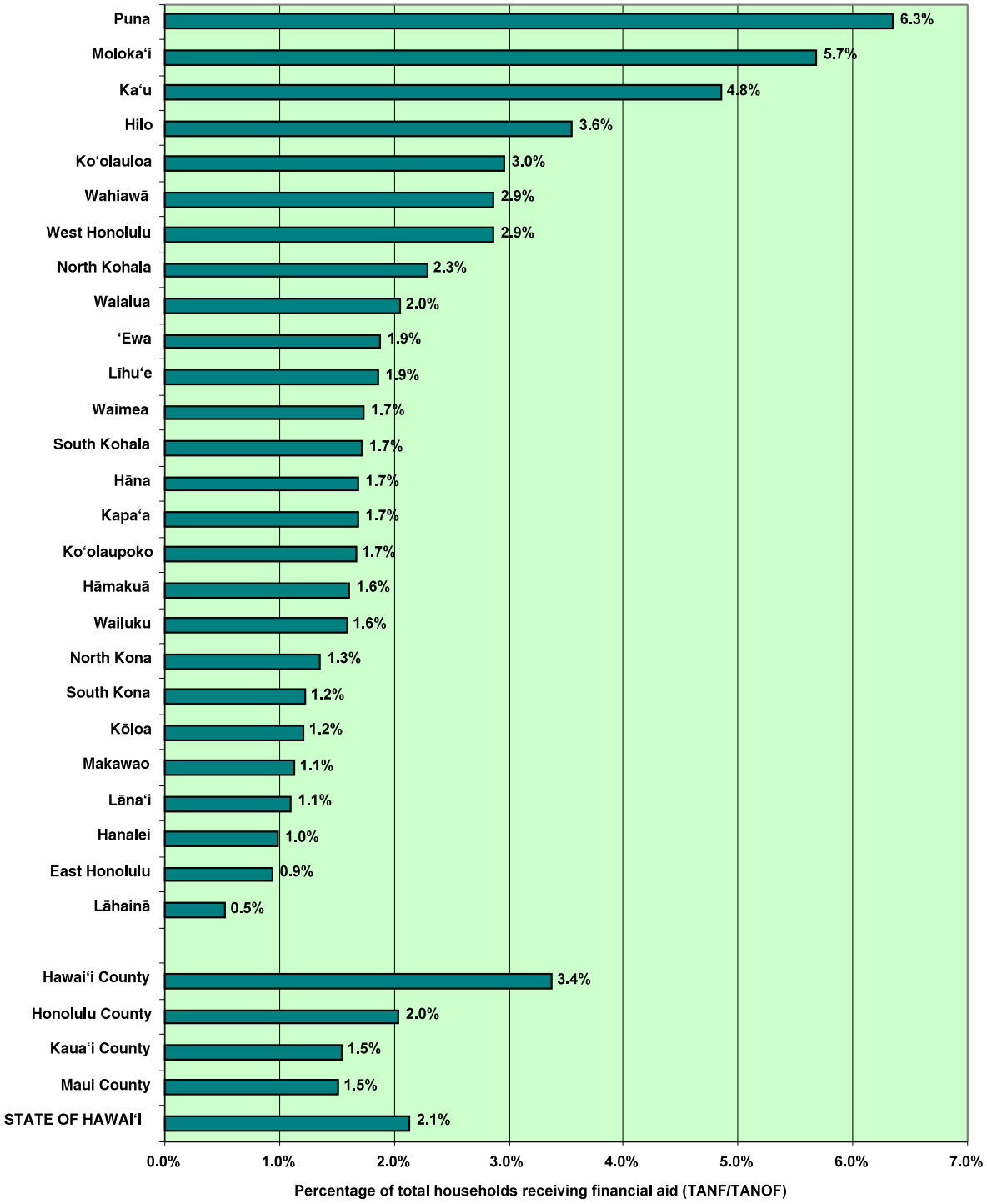
Source: State of Hawai'i, Department of Labor and Industrial Relations, Research and Statistics Office.

Chart 15: Percentage of Population 18 Years and Over with no High School Diploma, 2000



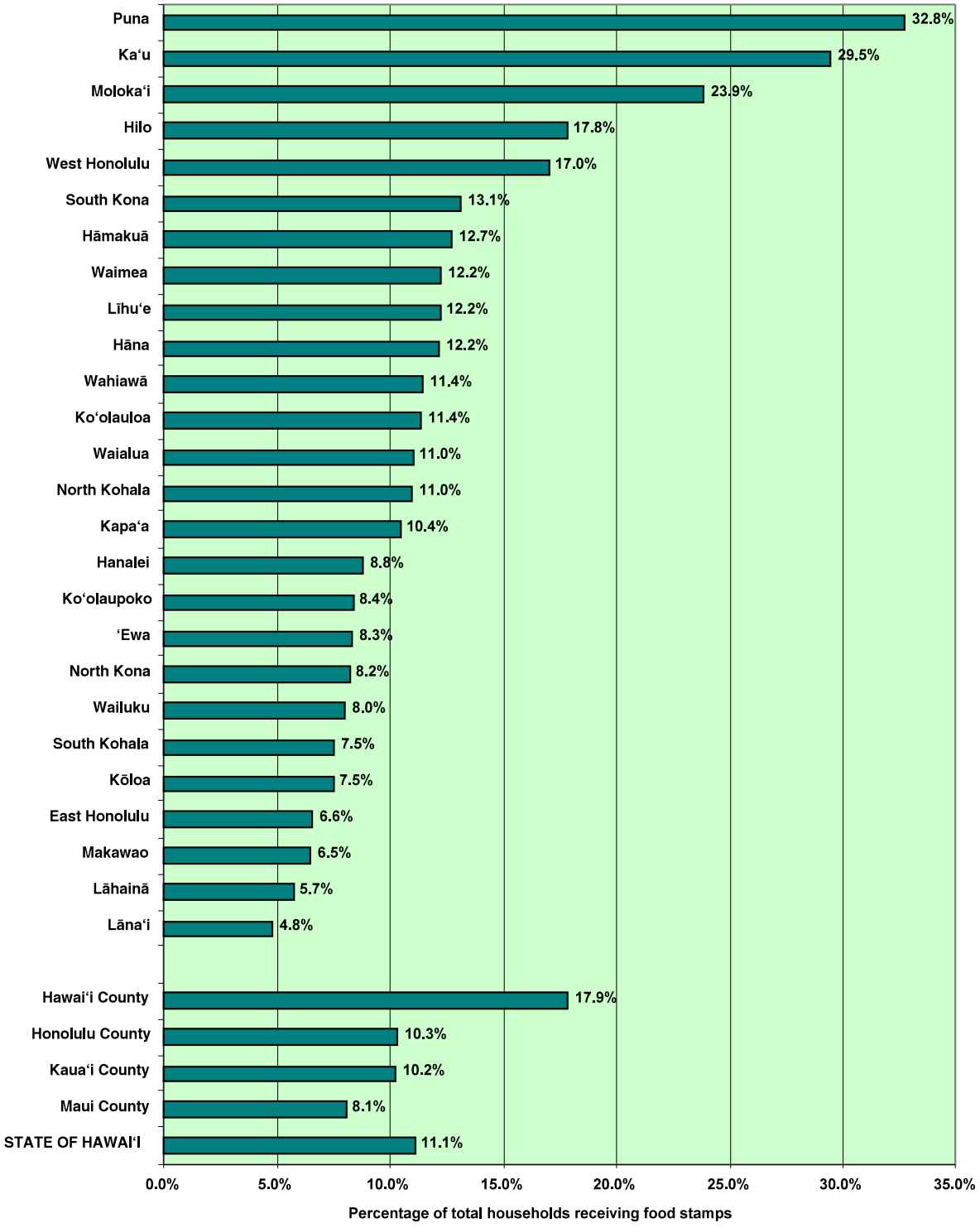
Source: U.S. Census Bureau, Census 2000.

Chart 16: Percentage of Households Receiving Financial Aid (TANF/TANOF), 2006



Source: Sate of Hawaiʻi, Department of Human Services, Benefit Employment and Support Services Division, Statistics Office.

Chart 17: Percentage of Households Receiving Food Stamps, 2007



Source: Sate of Hawai'i, Department of Human Services, Benefit Employment and Support Services Division, Statistics Office.

CHAPTER 3 INDICATORS OF RISK AND RESOURCES

Risk Indicators

A quantitative measure of the health and socio-economic risk faced by the population is used as a proxy for measuring the level of need for primary care services. It is implicitly assumed that the higher the measured risk is in a particular service area, the greater is the perceived need for primary care services. While the risk assessment approach may not be sufficient to capture all the complex dimensions of need, it allows for ease and objectivity in the comparative analysis of service areas. Other favorable features are the reasonableness of the data requirements and the flexibility it allows in the selection of risk indicators.

The Klerman-Rosenbach model2 is used as the basis for the risk assessment. Two sets of risk indicators are used: (a) maternal and child health risk and (b) socio-economic risk.

The variables for maternal and child health risk are:

1. Infant mortality rate,
2. Less than adequate prenatal care rate,
3. Low-birthweight birth rate, and
4. Teen birth rate.

The socio-economic variables used are:

1. Percentage of population below 200% of poverty level,
2. Percentage of population age 65 years and over,
3. Unemployment rate,
4. Low parental education rate,
5. Percentage of households receiving public assistance, and
6. Percentage of households receiving food stamps.

The data are presented in Table 5 and Table 7.

Methodology for Risk Scoring

For each service area, a standardized score is computed for maternal and child health risk, socio-economic risk, and combined health and socio-economic risk. The standardized score is computed as follows:

2 Klerman, Lorraine V. and Margo Rosenbach. Need Indicators in Maternal and Child Health Planning. A manual developed at the Florence Heller Graduate School for Advanced Studies in Social Welfare, Brandeis University, Fall 1984.

$SS_{ij} = (X_{ij} - X_{mean}) / SD_j$, where

SS_{ij} = standardized score for the i^{th} service area on the j^{th} variable
X_{ij} = raw score for the i^{th} service area on the j^{th} variable
X_{mean} = mean for the j^{th} variable
SD_j = standard deviation for the j^{th} variable

A composite risk score (RS) is then computed for each service area by adding the standardized scores for all variables, i.e.,

$RS_i = SS_{i1} + SS_{i2} + ... + SS_{in}$, where

RS_i = composite score for service area I
$SS_{i1} + ...+ SS_{in}$ = the standardized scores for service area I on variable 1 to variable n.

This method assumes that the standardized scores are additive. For this reason, the results must be interpreted with care.

A high positive risk score implies that the population in the service area is at a relatively high risk for poor health. A low negative risk score implies a relatively low risk for poor health. It must be emphasized that the absolute numbers, by themselves, are less meaningful than what is revealed when interpreted in relative terms. Moreover, the scoring is based on a few selected indicators and changes to these variables may affect the risk scores and the ranking of service areas.

The results of the area ranking are presented in Table 6, Table 8, and Table 9. The service areas are ranked on the basis of their composite risk scores for maternal and child health risk, for socio-economic risk, and for combined health and socio-economic risk. Remember that this ranking process is only a relative measure and that an area's rank may change not only due to its own score but the increase or decrease in the score of another service area.

Table 5: Maternal and Infant Health Risk Indicators, 2001-2006

Service Area	Infant Mortality Rate (IMR)	Percent of Births with Less than Adequate Prenatal Care Utilization	Percent Low Birth Weight (LBW) Births	Percent of Births to Teen Mothers
State	6.5	27.9%	8.2%	2.7%
Honolulu	6.5	24.1%	8.3%	2.3%
East Honolulu	5.8	24.1%	8.2%	1.2%
West Honolulu	6.3	23.5%	9.0%	2.4%
ʻEwa	6.7	21.8%	8.7%	2.1%
Wahiawā	5.9	26.4%	7.7%	2.4%
Waiʻanae	11.1	28.3%	8.0%	5.5%
Waialua	5.9	24.6%	8.4%	1.8%
Koʻolauloa	5.5	31.8%	5.1%	2.1%
Koʻolaupoko	4.9	25.9%	7.7%	2.4%
Hawaiʻi	6.1	30.1%	8.2%	4.2%
Hilo	6.1	21.3%	8.5%	4.3%
Puna	5.0	23.6%	9.3%	5.1%
Kaʻu	11.6	45.0%	6.0%	5.0%
South Kona	5.6	48.7%	7.7%	5.5%
North Kona	5.8	44.0%	6.8%	3.6%
South Kohala	4.2	26.4%	8.6%	2.3%
North Kohala	16.5	28.7%	8.0%	4.0%
Hāmākua	6.8	24.1%	9.4%	3.4%
Maui	5.2	51.3%	7.1%	3.0%
Hāna	10.2	69.0%	6.1%	3.0%
Makawao	4.5	50.6%	6.9%	2.6%
Wailuku	5.3	53.5%	7.5%	3.2%
Lāhainā	4.1	53.3%	7.1%	2.2%
Lānaʻi	8.9	32.3%	9.3%	3.1%
Molokaʻi	8.2	29.8%	9.8%	5.2%
Kauaʻi	4.7	29.5%	7.3%	3.9%
Hanalei	2.3	32.3%	4.6%	1.8%
Kapaʻa	6.0	32.5%	5.6%	3.8%
Līhuʻe	3.5	25.6%	9.2%	3.2%
Kōloa	5.2	26.1%	8.2%	4.3%
Waimea	4.5	32.4%	8.3%	6.0%
Niʻihau	0.0	0.0%	0.0%	0.0%

Table 6: Ranking Based on Maternal and Infant Health Risk Scores

Service Area County-wide	Current Risk Rank	Current Risk Score
Honolulu	*(highest)*	
Waiʻanae	1	3.2
West Honolulu	2	-0.8
ʻEwa	3	-1.1
Waialua	4	-1.4
Wahiawā	5	-1.6
Koʻolaupoko	6	-2.0
East Honolulu	7	-2.3
Koʻolauloa	8	-2.9
	(lowest)	
Hawaiʻi	*(highest)*	
North Kohala	1	3.6
Kaʻu	2	2.7
South Kona	3	2.2
Puna	4	1.1
Hāmākua	5	1.0
Hilo	6	0.2
North Kona	7	-0.2
South Kohala	8	-1.4
	(lowest)	
Maui	*(highest)*	
Molokaʻi	1	3.1
Hāna	2	2.6
Lānaʻi	3	1.3
Wailuku	4	0.9
Makawao	5	-0.3
Lāhainā	6	-0.7
	(lowest)	
Kauaʻi	*(highest)*	
Waimea	1	1.3
Kōloa	2	-0.4
Līhuʻe	3	-0.7
Kapaʻa	4	-2.0
Hanalei	5	-5.4
	(lowest)	

Service Area State-wide	Current Risk Rank	Current Risk Score
State of Hawaiʻi	*(highest)*	
North Kohala	1	3.6
Waiʻanae	2	3.2
Molokaʻi	3	3.1
Kaʻu	4	2.7
Hāna	5	2.6
South Kona	6	2.2
Waimea	7	1.3
Lānaʻi	8	1.3
Puna	9	1.1
Hāmākua	10	1.0
Wailuku	11	0.9
Hilo	12	0.2
North Kona	13	-0.2
Makawao	14	-0.3
Kōloa	15	-0.4
Lāhainā	16	-0.7
Līhuʻe	17	-0.7
West Honolulu	18	-0.8
ʻEwa	19	-1.1
South Kohala	20	-1.4
Waialua	21	-1.4
Wahiawā	22	-1.6
Kapaʻa	23	-2.0
Koʻolaupoko	24	-2.0
East Honolulu	25	-2.3
Koʻolauloa	26	-2.9
Hanalei	27	-5.4
	(lowest)	

Table 7: Socio-Economic Risk Indicators

Service Area	Population <200% of Poverty (1999)	Population Age 65 and Over (2000)	Civilian Unemployment Rate (2007)	Adults without High School Diploma (2000)	Financial Aid (TANF) (2007)	Food Stamps (2007)
State	25.9%	13.3%	2.6%	15.3%	2.1%	11.1%
Honolulu	24.4%	13.4%	2.4%	14.8%	2.0%	10.3%
East Honolulu	23.0%	19.1%	2.0%	12.2%	0.9%	6.6%
West Honolulu	32.7%	15.5%	2.8%	23.6%	2.9%	17.0%
ʻEwa	18.2%	10.0%	2.1%	14.1%	1.9%	8.3%
Wahiawā	38.7%	9.4%	3.7%	15.4%	2.9%	11.4%
Waiʻanae	44.1%	8.1%	6.1%	21.7%	10.6%	41.0%
Waialua	33.9%	11.1%	2.7%	18.1%	2.0%	11.0%
Koʻolauloa	35.8%	8.0%	3.0%	14.2%	3.0%	11.4%
Koʻolaupoko	18.1%	11.9%	2.2%	9.5%	1.7%	8.4%
Hawaiʻi	34.5%	13.5%	3.3%	16.1%	3.4%	17.9%
Hilo	34.3%	17.3%	4.2%	15.8%	3.6%	17.8%
Puna	48.0%	10.2%	5.0%	18.2%	6.3%	32.8%
Kaʻu	47.4%	15.1%	7.0%	21.5%	4.8%	29.5%
South Kona	31.7%	13.2%	2.3%	16.8%	1.2%	13.1%
North Kona	24.4%	11.8%	1.5%	13.6%	1.3%	8.2%
South Kohala	25.8%	9.0%	1.3%	11.0%	1.7%	7.5%
North Kohala	26.3%	13.4%	1.9%	15.8%	2.3%	11.0%
Hāmākua	31.6%	17.2%	2.5%	22.3%	1.6%	12.7%
Maui	25.0%	11.4%	2.8%	16.9%	1.5%	8.1%
Hāna	40.7%	10.4%	3.6%	14.6%	1.7%	12.2%
Makawao	23.1%	9.9%	2.3%	11.0%	1.1%	6.5%
Wailuku	24.6%	12.3%	2.9%	19.4%	1.6%	8.0%
Lāhainā	21.2%	10.2%	2.4%	16.1%	0.5%	5.7%
Lānaʻi	24.7%	14.6%	2.2%	29.2%	1.1%	4.8%
Molokaʻi	42.3%	13.5%	5.8%	22.3%	5.7%	23.9%
Kauaʻi	27.5%	13.8%	2.5%	17.2%	1.5%	8.1%
Hanalei	31.0%	10.4%	1.5%	12.3%	1.0%	8.8%
Kapaʻa	31.5%	10.7%	3.0%	14.9%	1.7%	10.4%
Līhuʻe	22.2%	17.1%	1.6%	18.8%	1.9%	12.2%
Kōloa	20.9%	15.5%	2.7%	17.2%	1.2%	7.5%
Waimea	32.1%	16.0%	3.3%	23.5%	1.7%	12.2%

Table 8: Ranking Based on Socio-Economic Risk Scores

Service Area County-wide	Current Risk Rank	Current Risk Score
Honolulu	*(highest)*	
Waiʻanae	1	10.1
West Honolulu	2	3.0
Wahiawā	3	-0.1
Waialua	4	-0.6
Koʻolauloa	5	-1.5
East Honolulu	6	-2.1
ʻEwa	7	-4.4
Koʻolaupoko	8	-4.9
	(lowest)	
Hawaiʻi	*(highest)*	
Kaʻu	1	9.3
Puna	2	6.8
Hilo	3	3.4
Hāmākua	4	1.8
South Kona	5	-0.9
North Kohala	6	-1.7
North Kona	7	-3.9
South Kohala	8	-5.2
	(lowest)	
Maui	*(highest)*	
Molokaʻi	1	7.3
Lānaʻi	2	0.3
Hāna	3	-0.2
Wailuku	4	-1.4
Lāhainā	5	-4.3
Makawao	6	-5.0
	(lowest)	
Kauaʻi	*(highest)*	
Waimea	1	2.3
Līhuʻe	2	-0.6
Kōloa	3	-1.7
Kapaʻa	4	-1.7
Hanalei	5	-4.0
	(lowest)	

Service Area State-wide	Current Risk Rank	Current Risk Score
State of Hawaiʻi	*(highest)*	
Waiʻanae	1	10.1
Kaʻu	2	9.3
Molokaʻi	3	7.3
Puna	4	6.8
Hilo	5	3.4
West Honolulu	6	3.0
Waimea	7	2.3
Hāmākua	8	1.8
Lānaʻi	9	0.3
Wahiawā	10	-0.1
Hāna	11	-0.2
Waialua	12	-0.6
Līhuʻe	13	-0.6
South Kona	14	-0.9
Wailuku	15	-1.4
Koʻolauloa	16	-1.5
Kōloa	17	-1.7
North Kohala	18	-1.7
Kapaʻa	19	-1.7
East Honolulu	20	-2.1
North Kona	21	-3.9
Hanalei	22	-4.0
Lāhainā	23	-4.3
ʻEwa	24	-4.4
Koʻolaupoko	25	-4.9
Makawao	26	-5.0
South Kohala	27	-5.2
	(lowest)	

Table 9: Ranking Based on the Maternal and Infant Health, and Socio-Economic Health Risk Scores

Service Area County-wide	Current Risk Rank	Current Risk Score
Honolulu	*(highest)*	
Waiʻanae	1	13.3
West Honolulu	2	2.2
Wahiawā	3	-1.6
Waialua	4	-2.1
East Honolulu	5	-4.4
Koʻolauloa	6	-4.4
ʻEwa	7	-5.5
Koʻolaupoko	8	-6.9
	(lowest)	
Hawaiʻi	*(highest)*	
Kaʻu	1	12.0
Puna	2	7.9
Hilo	3	3.7
Hāmākua	4	2.8
North Kohala	5	1.9
South Kona	6	1.3
North Kona	7	-4.1
South Kohala	8	-6.7
	(lowest)	
Maui	*(highest)*	
Molokaʻi	1	10.3
Hāna	2	2.4
Lānaʻi	3	1.6
Wailuku	4	-0.5
Lāhainā	5	-5.0
Makawao	6	-5.3
Kauaʻi	*(highest)*	
Waimea	1	3.6
Līhuʻe	2	-1.4
Kōloa	3	-2.1
Kapaʻa	4	-3.7
Hanalei	5	-9.4
	(lowest)	

Service Area State-wide	Current Risk Rank	Current Risk Score
State of Hawaiʻi	*(highest)*	
Waiʻanae	1	13.3
Kaʻu	2	12.0
Molokaʻi	3	10.3
Puna	4	7.9
Hilo	5	3.7
Waimea	6	3.6
Hāmākua	7	2.8
Hāna	8	2.4
West Honolulu	9	2.2
North Kohala	10	1.9
Lānaʻi	11	1.6
South Kona	12	1.3
Wailuku	13	-0.5
Līhuʻe	14	-1.4
Wahiawā	15	-1.6
Waialua	16	-2.1
Kōloa	17	-2.1
Kapaʻa	18	-3.7
North Kona	19	-4.1
East Honolulu	20	-4.4
Koʻolauloa	21	-4.4
Lāhainā	22	-5.0
Makawao	23	-5.3
ʻEwa	24	-5.5
South Kohala	25	-6.7
Koʻolaupoko	26	-6.9
Hanalei	27	-9.4
	(lowest)	

CHAPTER 4 FEDERAL DESIGNATIONS/PROGRAMS

Background on Federal Designations[3]

Health Professional Shortage Area (HPSA)

A Health Professional Shortage Area (HPSA) means any of the following which has a shortage of health professionals: (a) an urban or rural area which is a rational service area for the delivery of health services, (b) a population group, or (c) a public or nonprofit private medical facility. HPSAs are divided into three major categories according to the type of health professional shortage: primary care, dental and mental health HPSAs. The programs that require HPSA designation are the National Health Service Corps (NHSC) and the Rural Health Clinic Certification Program. The Area Health Education Center (AHEC) Program gives special consideration to centers that serve HPSAs with higher percentages of underserved minorities, and gives special funding priority to centers providing substantial training experience in HPSAs. The Division of Shortage Designation of the Bureau of Health Professions with the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services s responsible for reviewing and designating HPSAs.

Medically Underserved Area/Population (MUA/MUP)

According to Sections 1302(7) and 330(b) of the Public Health Service (PHS) Act, the term *medically underserved area or medically underserved population* means the population of an urban or rural area designated as an area with a shortage of personnel health services. Recipients of Community Health Center (CHC) grant funds are legislatively required to serve areas or populations designated as medically underserved. Grants for the planning, development, or operation of community health centers under Section 330 of the PHS Act are available only to centers that serve designated MUAs or MUPs. Systems of care which meet the definition of a community health center but are not funded under Section 330, and are serving a designated MUA or MUP are eligible for certification as Federally Qualified Health Centers (FQHCs). The Division of Shortage Designation of the Bureau of Health Professions determines MUA/MUP designations.

Rural Health Center (RHC)

Section 1861(aa)(2) of the Social Security Act states that a rural health clinic must be located in an area that is *not urbanized* and that has been designated as a shortage area. Rural Health Centers must employ mid-level practitioners such as nurse practitioners, nurse midwives, and physician assistants. It must provide the same services that are required of a community health

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3 Sources: Public Health Service, HHS, 42 CFR Part 5 as of January 18, 1996; Bureau of Primary Health Care, Guidelines for MUA/MUP Designation, June 12, 1995; Richard C. Lee, Current Approaches to Shortage Area Designation, The Journal of Rural Health, Vol. 7 (4) Supp. 1991; Beth Giesting, Outline of Federal Designations for Areas, Populations, and Providers, (part of memo to Representative Kahikina, dated January 23, 1996, Honolulu); National Association of County Health Officials, National Health Service Corps: Applying for Corps Personnel, January 17, 1992.

center. In addition, if a Rural Health Center serves a HPSA or MUA/MUP, it is eligible to receive enhanced Medicaid (except under a wavered program like QUEST) and Medicare payments for services.

Federally Qualified Health Center (FQHC)

A Federally Qualified Health Center is an entity which meets the requirements of a federally-funded health center, whether or not it receives a grant under Sections 329, 330 or 340 of the Public Health Service Act. These requirements include being nonprofit, having a community-based board of directors, providing or arranging all the necessary and enabling services, and providing care regardless of the ability to pay.

The National Health Service Corps (NHSC)

The National Health Service Corps is operated through the Bureau of Clinician Recruitment and Services of HRSA and is a program for the recruitment of primary care providers to serve in HPSAs, including:

- Primary Care Physicians (Family Medicine, General Internal Medicine, General Pediatrics, Obstetrics/Gynecology, General Psychiatry)
- Nurse Practitioners
- Physician Assistants
- Certified Nurse-Midwives
- Dentists
- Dental Hygienists
- Mental and Behavioral Health Professionals (health service psychologists, clinical social workers, licensed professional counselors, marriage and family therapists, andh psychiatric nurse specialists)

These health professionals can apply to serve as NHSC:

- Ready Responders (serve on a mobile team as U.S. Public Health Service commissioned officer)
- Obligated Scholars (graduates who have been provided tuition support in return for obligated service in a HPSA)
- Participants in the NHSC Loan Repayment program (professionals who receive loan repayment while serving in a HPSA)

Many types of practices can apply to become eligible sites for the placement of NHSC Ready Responders, Scholars and Loan Repayors, including:

- FQHCs, FQHC Look-A-Likes, and RHCs
- Public Health Departments
- Hospital Affiliated Primary Care Practices
- Managed Care delivery systems
- Group Practices, Clinic Networks
- Solo Practices/Partnerships
- State and Federal Prisons
- U.S. Immigration, Customs & Enforcement
- Tribally Run Indian Health Service Sites and Federal Indian Health Service Sites

For more information visit http://nhsc.bhpr.hrsa.gov . For assistance call the NHSC Helpline, at 1-800-221-9393 (available from 9 a.m. to 5:30 p.m. EST) or send an email to callcenter@hrsa.gov. Application forms for interested health professionals and practice sites can be found at http://nhsc.bhpr.hrsa.gov/applications/

Table 10: Eligibility Criteria and Data Requirements for a Shortage Designation[4]

Medically Underserved Area (MUA)

Involves application of the Index of Medical Underservice (IMU) to obtain score on a scale of 0 to 100. An IMU of 62.0 or less qualifies area for designation as MUA.

- Rational service area,
- Percentage of population below 100% of poverty,
- Percentage of population age 65 years and over,
- Infant mortality rate, and
- Ratio of primary care physicians per 1000 population.

If total score is over 62.0, an area may still be designated upon documentation of unusual local conditions which are a barrier to access to or the availability of personal health services.

Medically Underserved Population (MUP)

Involves application of the IMU to data on an underserved population group within a geographic area.

- Population with economic barriers (low-income or Medicaid eligible population), or
- Populations with cultural and/or linguistic access barriers to primary care.

Involves assembling data as stated for MUAs except that:

- The population now refers to the population of the requested group within the area and not the total resident population of the area, and
- The number of FTE primary care physicians includes only those serving the requested population group.

If total weighted value is 62.0 or less, the population group qualifies for designation as MUP.

Primary Care Health Profession Shortage Area (HPSA)

Geographic HPSA

- Rational service area,
- Population to FTE primary care physician ratio at least 3,500:1 (high needs area) or 3,000:1 (unusually high needs area). An area is defined, as an unusually high needs area, if any of the following conditions exist:
    a) >100 births per year per 1000 women age 15 to 44 years,
    b) >20 infant deaths per 1000 live births, or
    c) >20% of households with incomes below poverty.

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[4]Sources: Bureau of Primary Health Care, Guidelines for MUA/MUP Designation and Guidelines for HPSA Designation, June 12, 1995. Public Health Service, HHS, 42 CFR, Ch1, Part 5, As of January 18, 1996

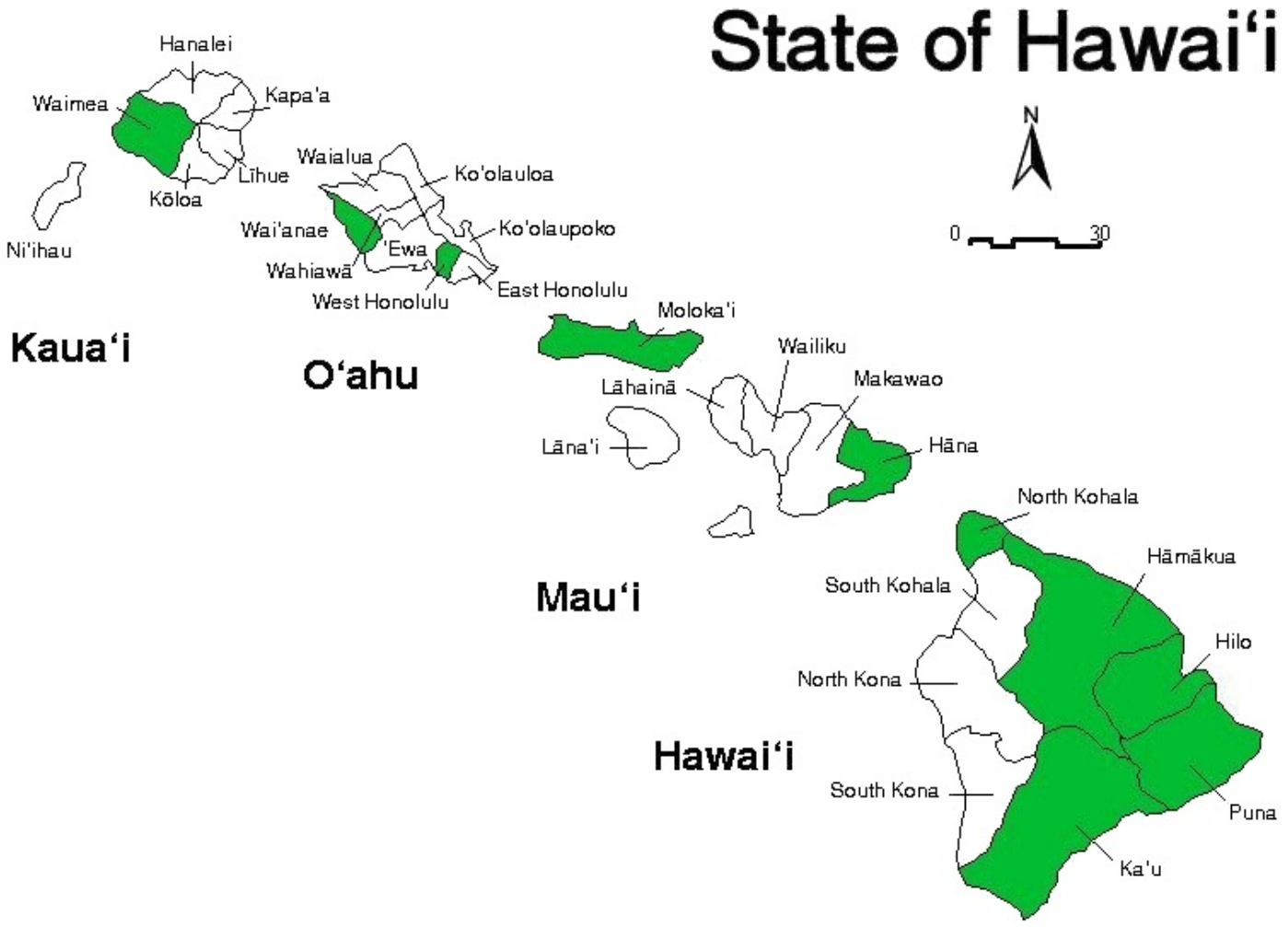
- primary care professionals in contiguous areas are overutilized, excessively distant, or inaccessible, if any of the following occur:
    a) >30 minutes from area center,
    b) FTE> 2,000:1 , or
    c) Inaccessible due to demographic or socio-economic barriers.

Population group HPSA: if a geographic area does not meet the shortage criteria but a population group within the area has access barriers.

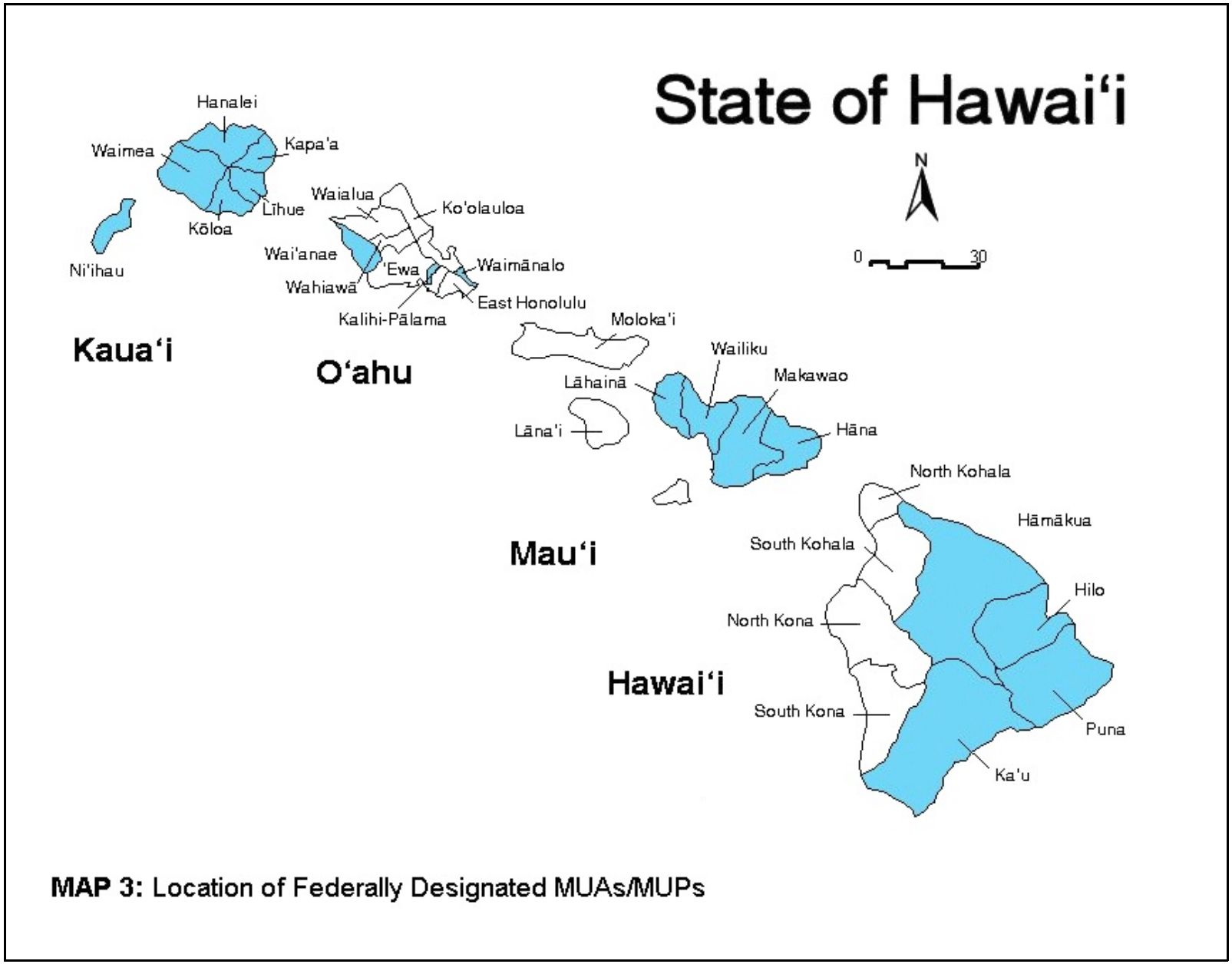
- Low-income: minimum 30% of population at or < 200% of poverty,
- Medicaid-eligible population: minimum 30% of population at or < 200% of poverty,
- Migrant farmworkers and families,
- American Indians or Native Alaskans,
- Homeless, or
- Other population isolated by linguistic or cultural barriers or by handicaps.

Critical Access Hospital (CAH)

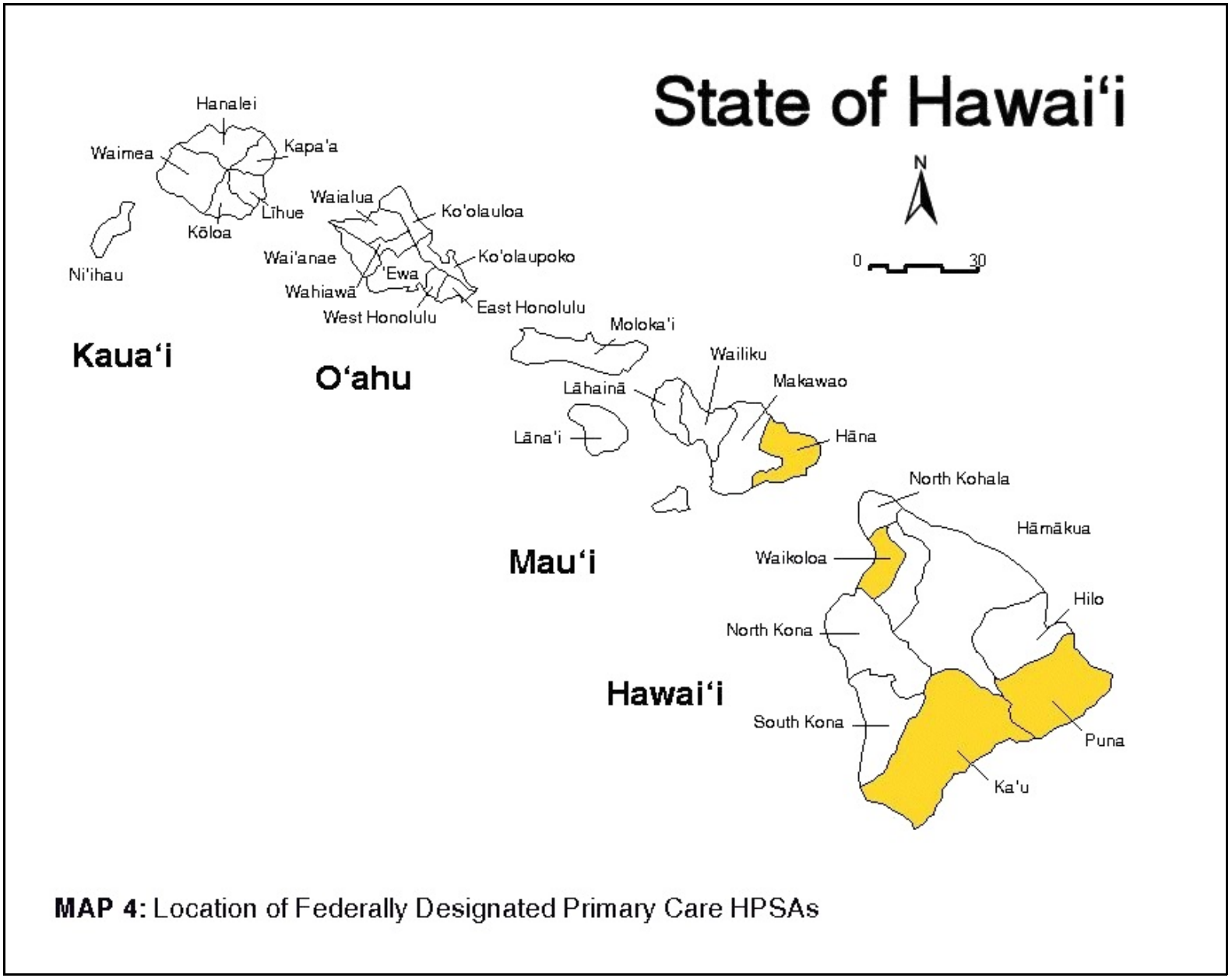
A critical access hospital (CAH) is a small, rural hospital considered critical to providing access to medical care to the populations they serve. These hospitals have not more than 25 acute care beds and must maintain 24-hour emergency departments. Because these hospitals are considered critical for maintaining the rural health safety net, they receive cost-based reimbursement from Medicare.



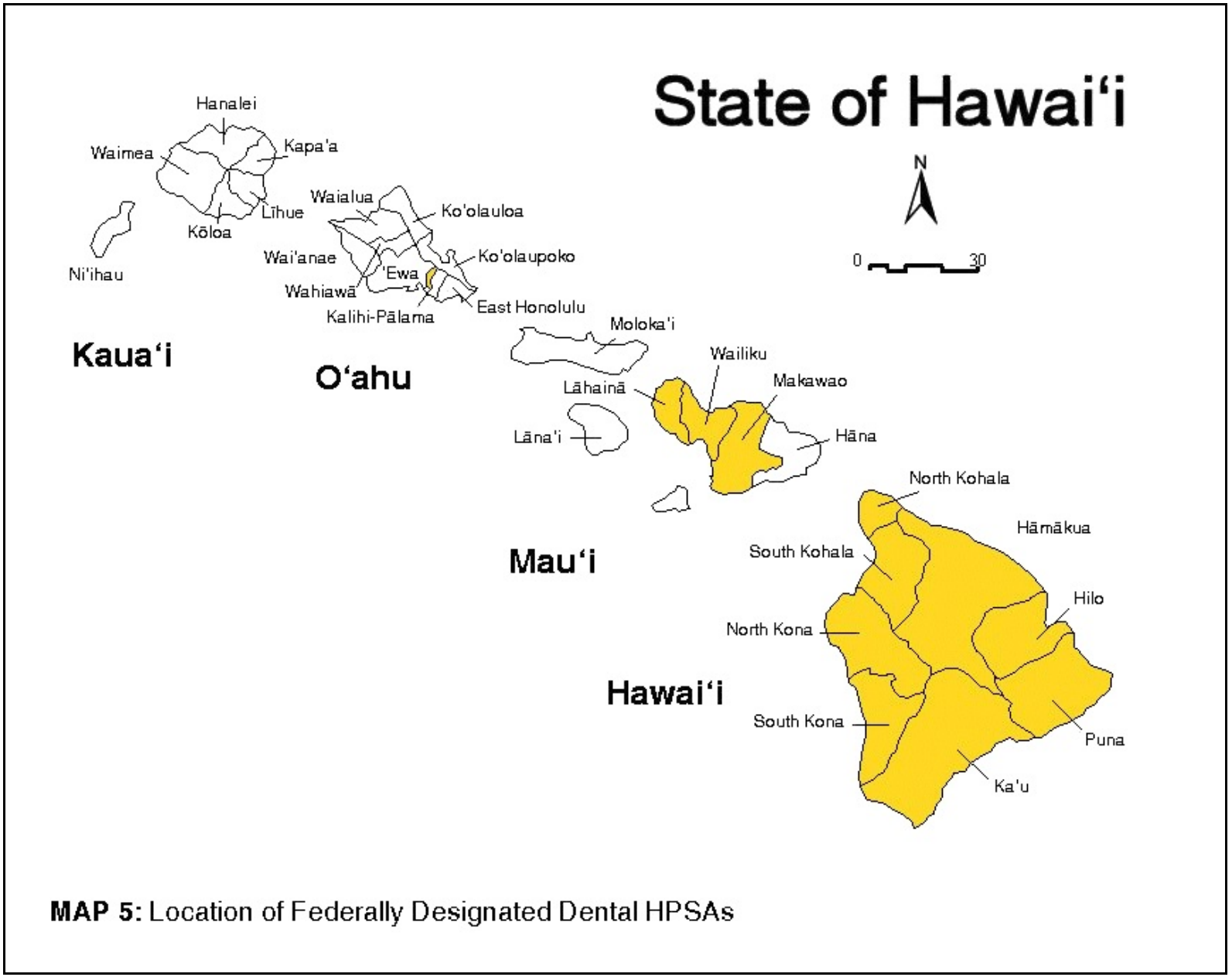
MAP 2: Location of Service Areas with High Combined Risk Scores



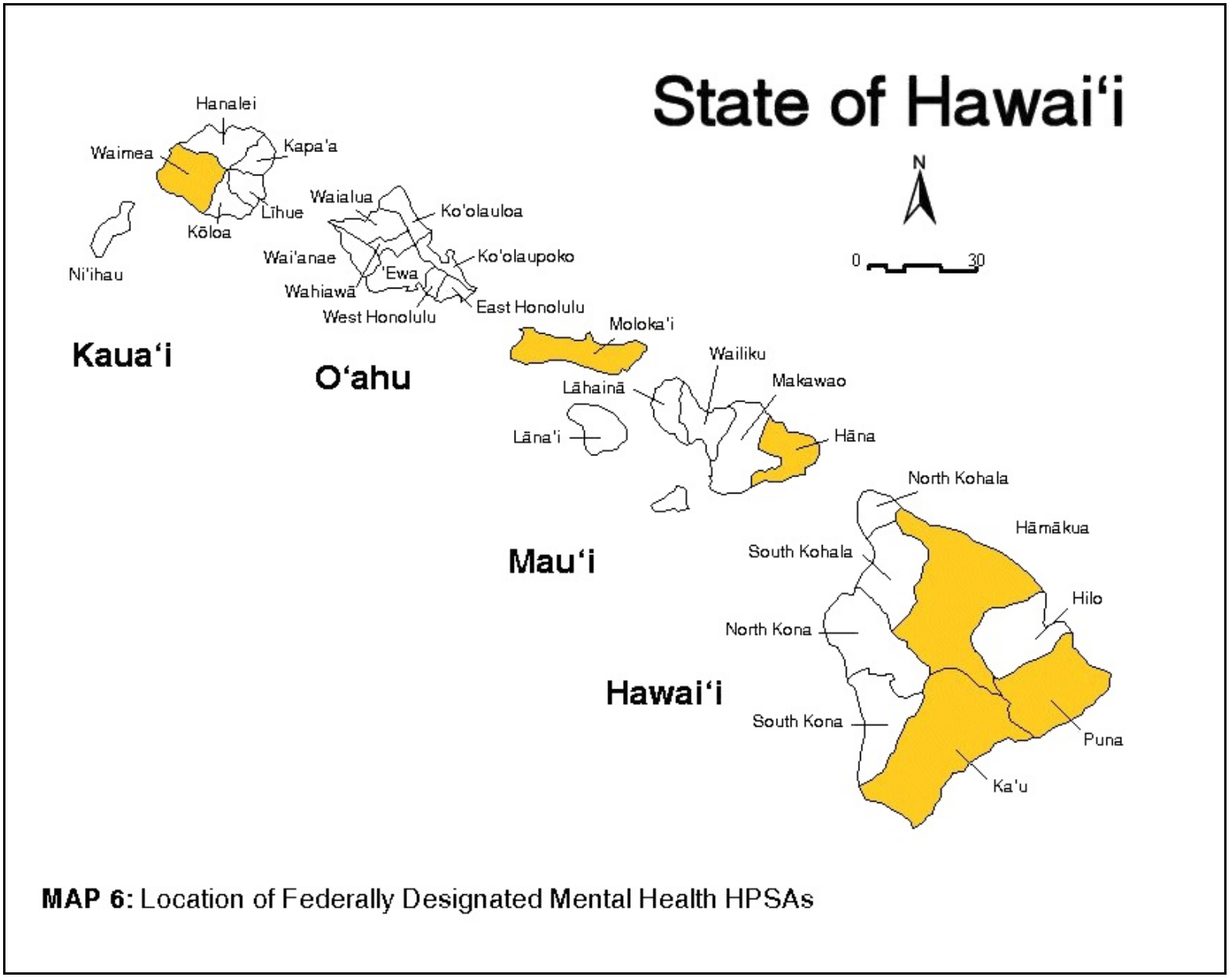
MAP 3: Location of Federally Designated MUAs/MUPs



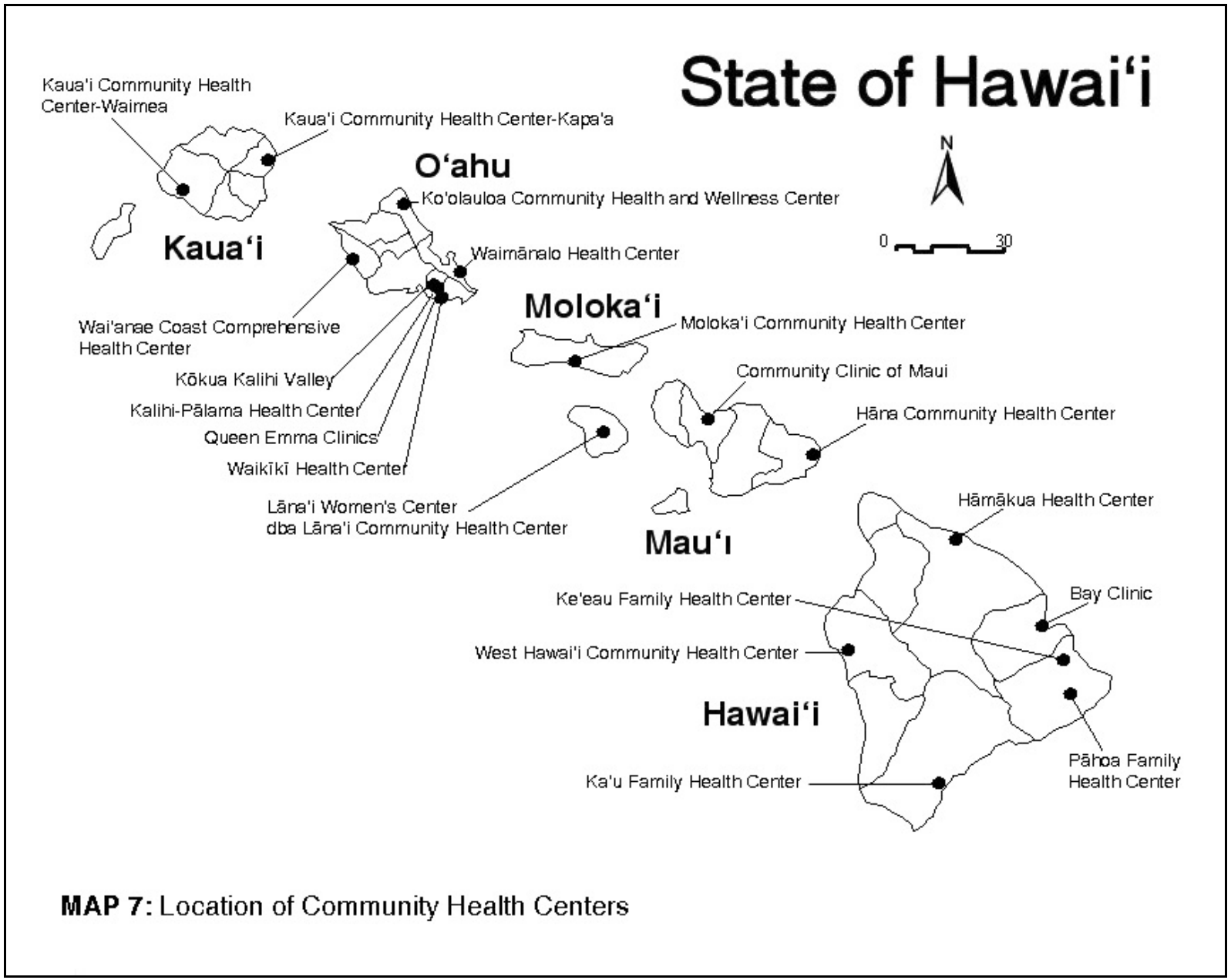
MAP 4: Location of Federally Designated Primary Care HPSAs



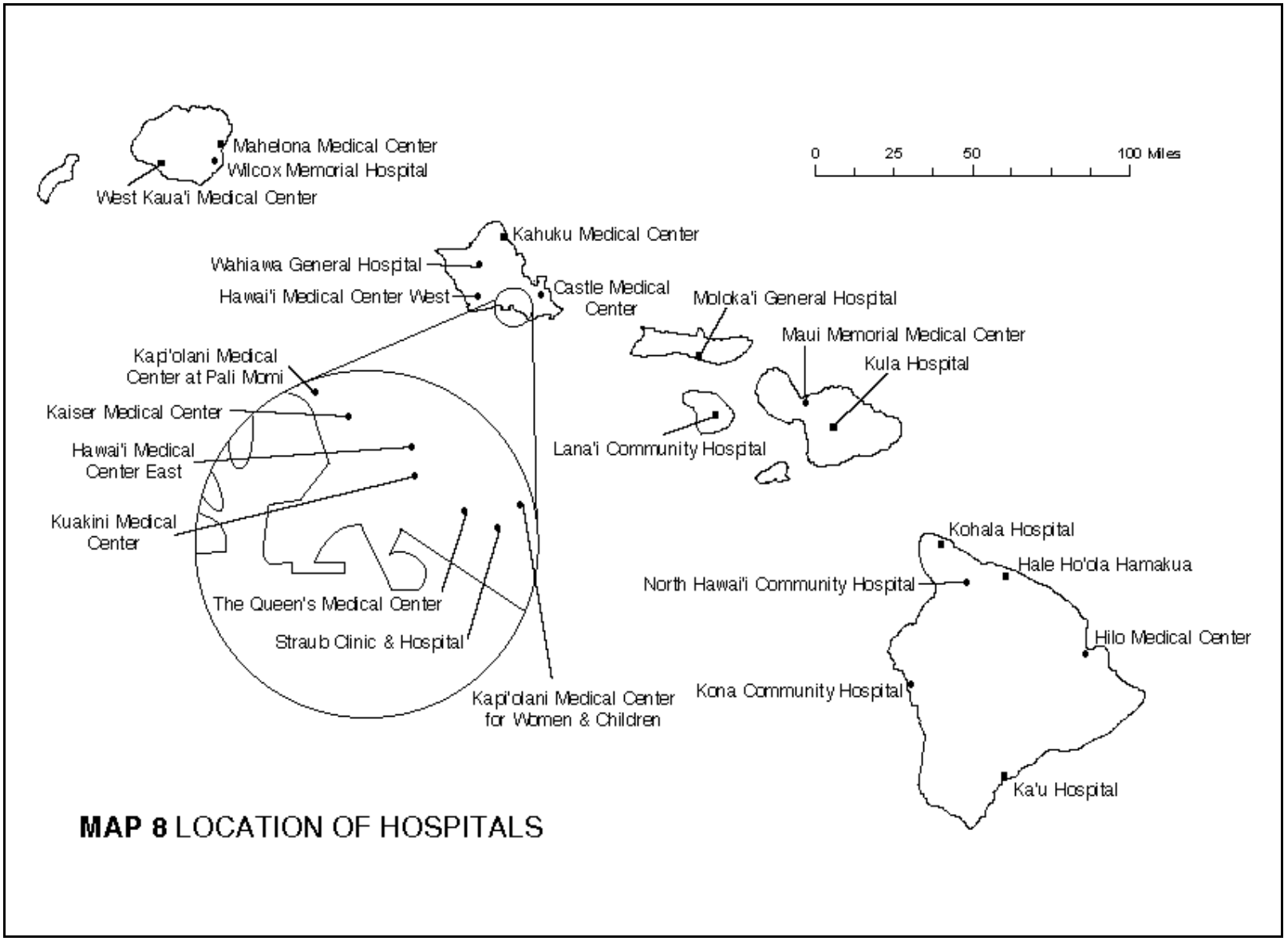
MAP 5: Location of Federally Designated Dental HPSAs



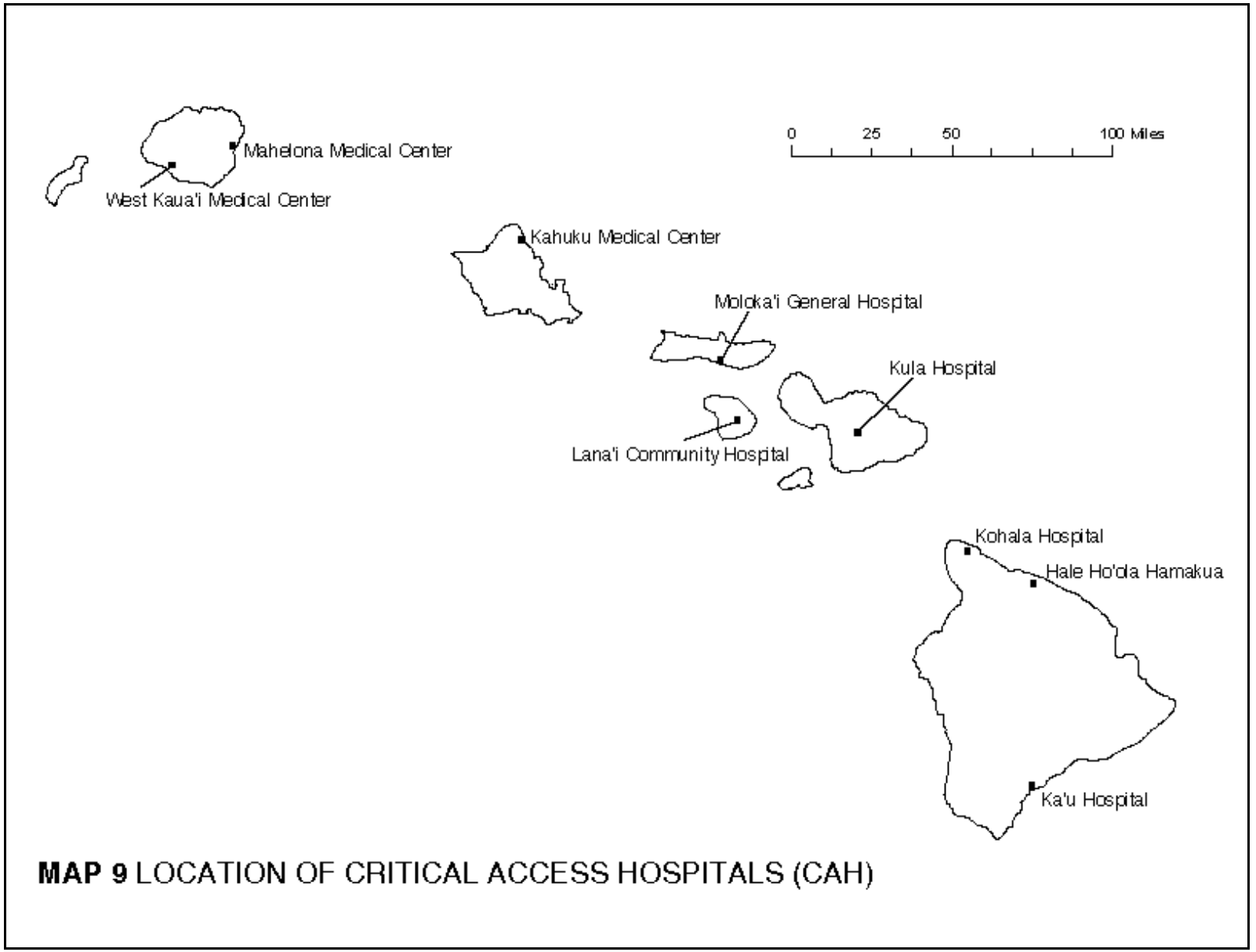
MAP 6: Location of Federally Designated Mental Health HPSAs



MAP 7: Location of Community Health Centers



MAP 8 LOCATION OF HOSPITALS



MAP 9 LOCATION OF CRITICAL ACCESS HOSPITALS (CAH)

Table 11: Medically Underserved Area/Population (MUA/P) and Health Professional Shortage Area (HPSA) Designations By Area, Type, Score and Designation Date
(as of March 2008)

Area	Medically Underserved Area/Population (MUA/P)	Primary Care HPSA	Dental HPSA	Mental Health HPSA	Date of HPSA Designation		
					PC	Dental	Mental Health
(Census Tract)	Designations						
Hawai'i County							
Hawai'i County	MUP		✔✔ 12			6/06	
Puna (210.01-211)		✔ (211) 14		✔ 16	9/06		8/07
Ka'u (212)		✔ 17		✔ 12	8/06		8/06
Waikoloa (217.01)		✔ 8			9/06		
North Hawai'i (219-221)				✔✔ 9			8/07
City & County of Honolulu							
Waikīkī (18.01-20.02)	GOV MUP						
Kalihi-Pālama (51-62.02)	GOV MUP		✔✔ 7			11/05	
Kalihi Valley (63.01-66)	MUA		✔✔ 7			11/05	
Wai'anae (96.01-98.01)	MUA						
Ko'olauloa (101-102.02)	MUA						
Waimānalo (113.01-113.02)	GOV MUP						
Kalawao County							
Kalawao County (319)	MUA			✔ 17			8/07
Kaua'i County							
Kaua'i County	GOV MUP			✔ (408–409) 8			11/07
Maui County							
Hana/Ha'ikū (301-302)	GOV MUP	✔ 14	Pending SDB	✔✔ (301) 10	9/06	Pending SDB	9/06
Maui (303.01-315)	MUP		✔✔ 16			6/02	
Lāna'i Island (316)	MUP						
Moloka'i Island (317-319)	MUA			✔ 17			8/07

MUA — Medically Underserved Area
MUP — Medically Underserved Population
HPSA — Health Professional Shortage Area
GOV MPU — Medically Underserved Area requested by Governor
✔ — Approved as an Area designation
✔✔ — Approved as a Population designation

Table 12: Automatic Facility HPSA Scores by Area, Type, and Classification
(as of March 2008)

Facility	Primary Care[1] Designation Score	Mental Health[1] Designation Score	Dental Health[1] Designation Score	Facility Classification
Hawai'i County				
Bay Clinic – Hilo	17	21	11	330E
Bay Clinic – Pāhoa	*	*	*	330E
Bay Clinic Kea'au	*	*	*	330E
West Hawai'i Health Center	2	2	0	330E
Hāmākua Health Center	5	8	10	330E
City & County of Honolulu				
Federal Detention Center Honolulu	21	21		Correctional
Hālawa Correctional Facility	9	15	9	Correctional
Women's Community Correctional Center	9	9	9	Correctional
Waikīkī Health Center	6	10	10	330H
Kalihi-Pālama Health Center	6	10	10	330E
Kōkua Kalihi Valley	6	10	10	330E
Wai'anae Coast Comprehensive Health Center	7	11	17	330E
Ko'olauloa Health and Wellness Center	18	24	16	330E
Waimānalo Health Center	6	10	9	330E
Kaua'i County				
Kaua'i Community Health Center	5	10	10	330E
Maui County				
Hāna Community Health Center	5	5	18	330E
Community Clinic of Maui	3	6	13	330E
Lāna'i Women's Center dba Lāna'i Community Health Center	6			330E
Moloka'i 'Ohana Health Care	5	10	18	330E
Moloka'i General Hospital	5		18	RHC

FQHC — Federally Qualified Health Center (330 or 340 grantee)
HPSA — Health Professional Shortage Area
RHC — Rural Health Center
330E — Community Health Center
330H — Healthcare for the Homeless Center

[1] Automatic Facility HPSA Scores are as of March 2008 and may be subject to change. Check for updated scores (under "Type" column as "Community Health Center") at http://hpsafind.hrsa.gov/HPSASearch.aspx
* Satellite clinics may use the higher of their parent site's Automatic Facility Score or the geographic or population group score for the Census Tract in which they are located.

Table 13: Facilities of the Hawai‘i Health Systems Corporation (HHSC)

Hawai‘i Health Systems Corporation (HHSC)

The Hawai‘i Health Systems Corporation (HHSC) was established by the Hawai‘i State Legislature in 1996 to more efficiently and effectively manage and operate the twelve community-based hospitals in the State. The HHSC is the fourth largest public healthcare system in the United States, and in Hawai‘i, the single largest provider of long-term care services and collectively the largest provider of emergency services.

HHSC has restructured the original twelve acute and long-term care hospitals of the State into five regions providing quality healthcare to the Neighbor Island communities, thereby greatly enhancing the inter and intra-regional operational support and fiscal efficiency of those hospitals. All HSHC hospitals are fully licensed and certified or accredited by a state or federal accrediting organization.

Island	HHSC Hospitals	Non-HHSC Hospitals
Kaua‘i	West Kaua‘i Medical Center Mahelona Medical Center	Wilcox Memorial Hospital
O‘ahu	Kahuku Medical Center	Wahiawā General Hospital Hawai‘i Medical Center West Hawai‘i Medical Center East Kapi‘olani Medical Center at Pali Momi Kapi‘olani Medical Center for Women and Children Kaiser Medical Center Kuakini Medical Center The Queen's Medical Center Straub Clinic and Hospital Castle Medical Center
Lāna‘i	Lāna‘i Community Hospital	
Moloka‘i		Moloka‘i General Hospital
Maui	Maui Memorial Medical Center Kula Hospital	
Hawai‘i	Kohala Hospital Kona Community Hospital Hale Ho‘ōla Hāmākua Ka‘u Hospital Hilo Medical Center	North Hawai‘i Community Hospital

DEVELOPMENTAL HEALTH RISK INDEXES

This edition of the Primary Care Data Book includes two health risk indexes which are in development for future editions of the data book. The first index centers on chronic disease indicators. Included in this index are measures on diabetes, obesity, smokers, stroke mortality, and chronic heart disease mortality. The second index focuses on oral health indicators which is measured by visits to a dentist, teeth cleaning, and tooth loss.

The data for these two indexes come from the Hawai'i Behavioral Risk Factor Surveillance System (BRFSS) Program, which is part of the Hawai'i State, Department of Health. It is important to be knowledgeable of the BRFSS, in order to correctly interpret information useful in health planning, policy development, evaluation, and research.

The BRFSS is a state-wide survey. The sample design uses a random-digit-dialed probability sample of the adult (aged 18 years and over) population. The sampling is stratified in order to facilitate inter-regional comparisons. The survey consists of a core of questions asked in all States, standardized optional questions on selected topics that are administered at the State's discretion, a rotating core of questions asked every other year in all States, and State-added questions developed to address State-specific needs. The survey is conducted through a telephone interview by a private contractor. The target population is the civilian, noninstitutionalized population 18 years of age and older who reside in households with telephones. The collected data is then weight-adjusted to account for sampling and non-sampling error adjustments.

Consequently, the survey does not reflect the characteristics of the infant, child, and adolescent population of the state. Furthermore, samples for some areas maybe too small to calculate reliable measures, unstable measures are not useful in making decisions.

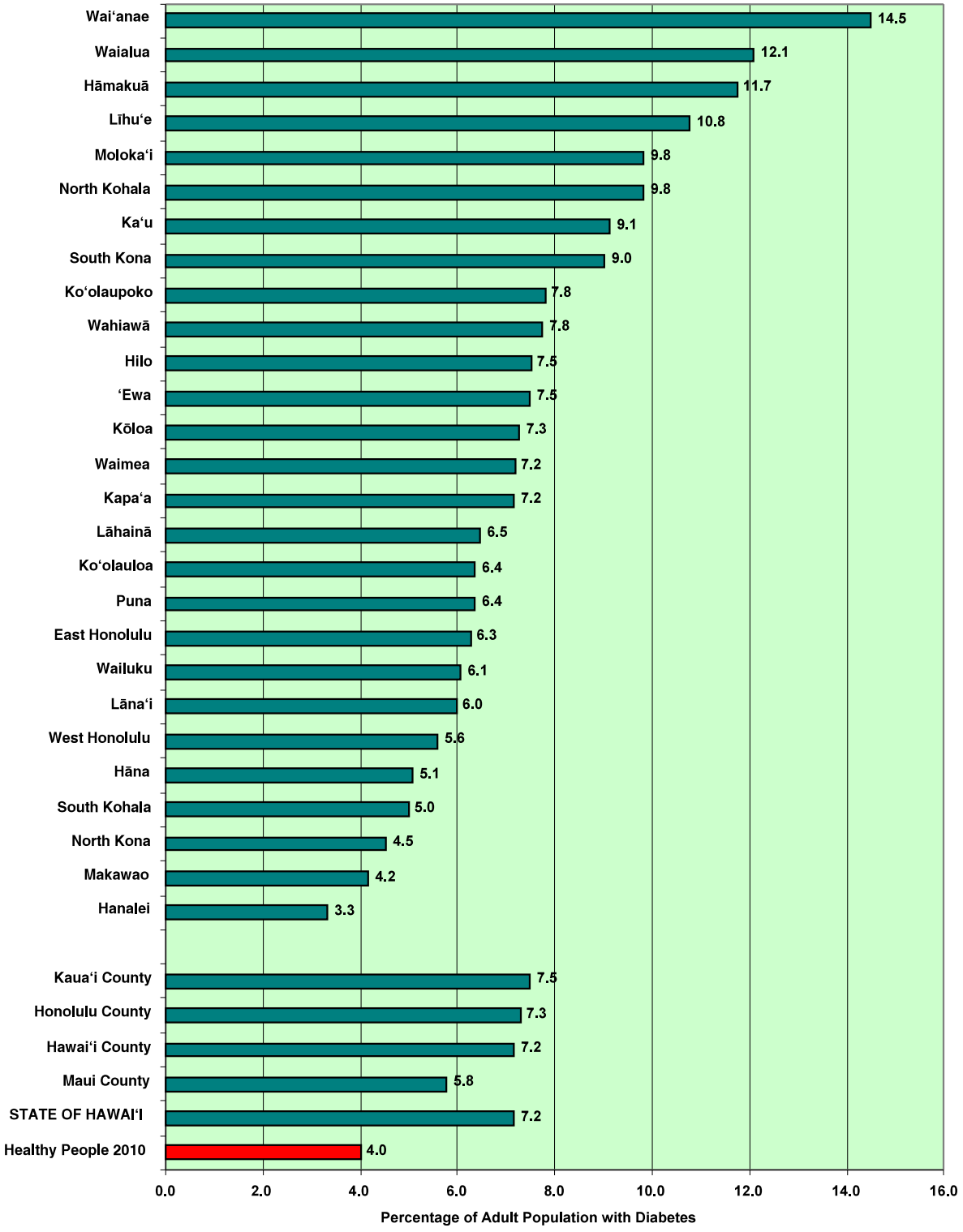
In the previous of the Primary Care Needs Assessment Data Book, the body mass index (BMI) for obese adults was defined as BMI>35. In this edition the definition was changed to BMI>30, which is a more generally accepted definition.

Table 14: Estimated Annual Adult Diabetes Prevalence, 2002-2006

Service Area	Estimated Annual Adult Population	Estimated Annual Number of Adults Who Have Diabetes	Estimated Annual Percent of Adults with Diabetes	95% Confidence Interval	
				Lower Limit	Upper Limit
State	960,370	68,834	7.2	6.7	7.6
Honolulu	672,344	49,018	7.3	6.7	7.9
East Honolulu	189,141	11,874	6.3	5.3	7.3
West Honolulu	94,865	5,317	5.6	4.2	7.0
ʻEwa	217,141	16,258	7.5	6.4	8.6
Wahiawā	24,933	1,934	7.8	4.4	11.1
Waiʻanae	29,923	4,338	14.5	9.2	19.8
Waialua	9,729	1,175	12.1	4.8	19.4
Koʻolauloa	13,330	848	6.4	3.1	9.6
Koʻolaupoko	93,282	7,273	7.8	6.2	9.4
Hawaiʻi	119,640	8,570	7.2	6.3	8.0
Hilo	38,183	2,870	7.5	6.2	8.8
Puna	16,198	1,030	6.4	4.4	8.3
Kaʻu	13,962	1,275	9.1	5.9	12.4
South Kona	8,480	765	9.0	5.8	12.3
North Kona	22,086	1,003	4.5	3.1	5.9
South Kohala	10,774	538	5.0	2.8	7.2
North Kohala	3,965	389	9.8	5.2	14.5
Hāmākua	5,971	701	11.7	5.1	18.4
Maui	100,576	5,807	5.8	4.9	6.6
Hāna	1,602	82	5.1	0.0	10.5
Makawao	29,646	1,236	4.2	2.9	5.4
Wailuku	46,593	2,828	6.1	4.8	7.4
Lāhainā	13,803	892	6.5	3.4	9.5
Lānaʻi	2,501	149	6.0	4.0	7.9
Molokaʻi	6,132	603	9.8	7.1	12.6
Kauaʻi	44,023	3,297	7.5	6.3	8.7
Hanalei	5,269	176	3.3	0.8	5.9
Kapaʻa	13,083	937	7.2	5.1	9.3
Līhuʻe	9,023	973	10.8	7.5	14.1
Kōloa	10,374	755	7.3	4.7	9.8
Waimea	6,217	446	7.2	4.1	10.3
Niʻihau	57	11	—	—	—

Source: State of Hawaiʻi, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS).

Chart 18: Estimated Annual Adult Diabetes Prevalence, 2002-2006



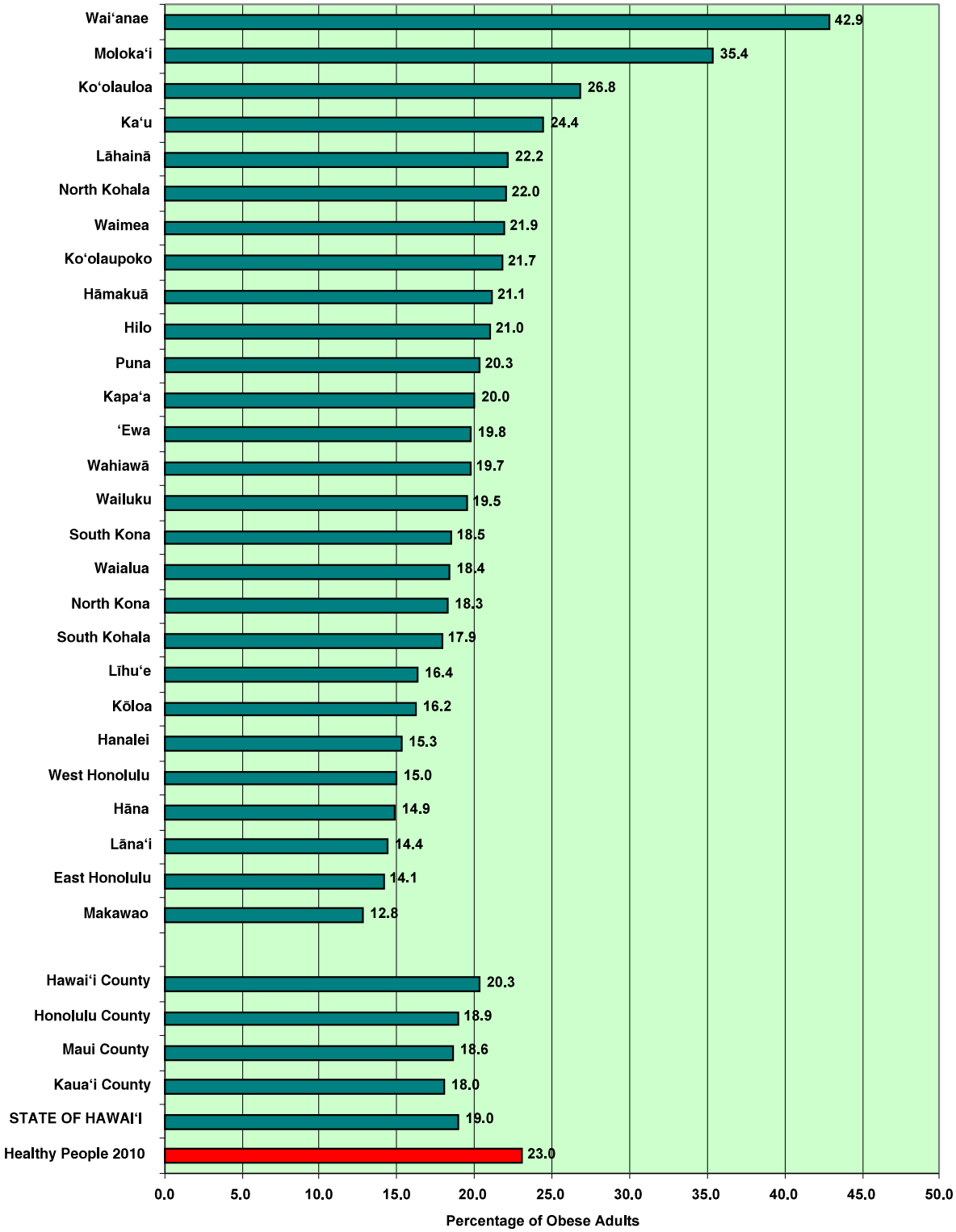
Source: State of Hawaiʻi, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS).

Table 15: Estimated Annual Adult Obesity Rate, 2002-2006

Service Area	Estimated Annual Adult Population	Estimated Annual Number of Adults Who are Obese (BMI > 30.0)	Estimated Annual Percent of Adults Who are Obese	95% Confidence Interval	
				Lower Limit	Upper Limit
State	931,791	176,835	19.0	18.2	19.8
Honolulu	653,431	123,573	18.9	17.9	19.9
East Honolulu	184,446	26,014	14.1	12.5	15.7
West Honolulu	91,318	13,695	15.0	12.5	17.6
ʻEwa	210,298	41,567	19.8	17.9	21.6
Wahiawā	24,363	4,803	19.7	14.6	24.9
Waiʻanae	28,676	12,292	42.9	36.4	49.3
Waialua	9,683	1,783	18.4	9.5	27.3
Koʻolauloa	13,131	3,521	26.8	19.8	33.9
Koʻolaupoko	91,516	19,897	21.7	19.0	24.5
Hawaiʻi	116,088	23,600	20.3	18.9	21.8
Hilo	37,075	7,779	21.0	18.4	23.5
Puna	15,850	3,212	20.3	16.2	24.4
Kaʻu	12,666	3,094	24.4	19.0	29.9
South Kona	8,368	1,547	18.5	13.2	23.8
North Kona	21,734	3,976	18.3	15.3	21.3
South Kohala	10,665	1,908	17.9	14.3	21.5
North Kohala	3,928	864	22.0	13.0	31.0
Hāmākua	5,782	1,220	21.1	14.0	28.3
Maui	98,417	18,350	18.6	16.9	20.4
Hāna	1,582	235	14.9	4.2	25.6
Makawao	28,975	3,715	12.8	10.3	15.3
Wailuku	45,804	8,936	19.5	16.7	22.4
Lāhainā	13,316	2,951	22.2	16.8	27.5
Lānaʻi	2,491	359	14.4	9.5	19.3
Molokaʻi	5,950	2,104	35.4	30.4	40.3
Kauaʻi	43,033	7,767	18.1	16.1	20.0
Hanalei	5,145	788	15.3	9.5	21.2
Kapaʻa	12,890	2,575	20.0	16.4	23.6
Līhuʻe	8,802	1,442	16.4	12.3	20.5
Kōloa	10,076	1,635	16.2	12.2	20.3
Waimea	6,072	1,327	21.9	16.3	27.4

Source: State of Hawaiʻi, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS).

Chart 19: Estimated Annual Adult Obesity Rate, 2002-2006



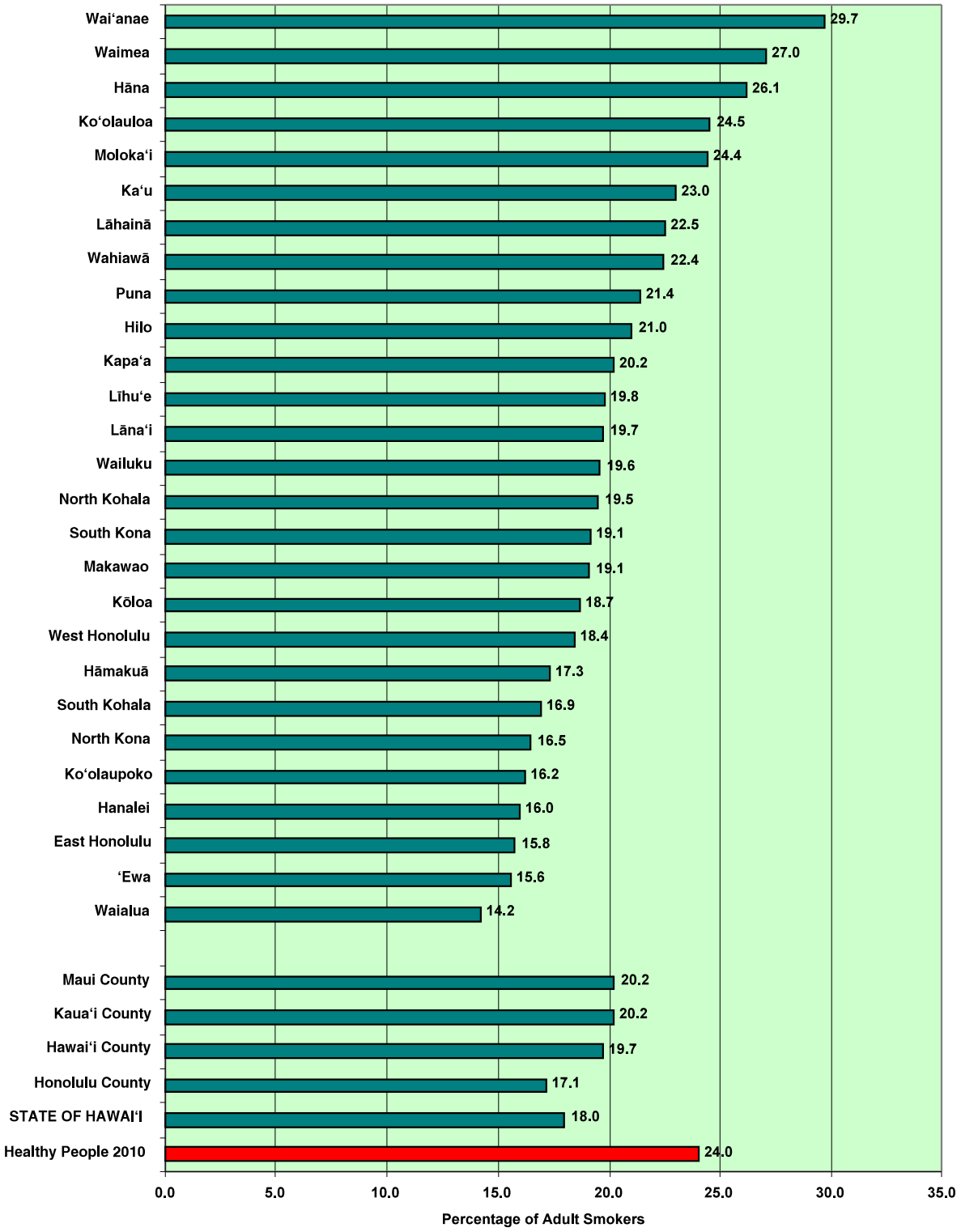
Source: State of Hawaiʻi, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS).

Table 16: Estimated Annual Adult Smokers, 2002-2006

Service Area	Estimated Annual Adult Population	Estimated Annual Number of Adults who Smoke	Estimated Annual Percent of Adults who Smoke	95% Confidence Interval	
				Lower Limit	Upper Limit
State	960,064	172,679	18.0	17.3	18.7
Honolulu	672,059	115,242	17.2	16.2	18.1
East Honolulu	189,009	29,770	15.8	14.1	17.4
West Honolulu	94,493	17,423	18.4	15.8	21.0
ʻEwa	217,049	33,754	15.6	14.0	17.1
Wahiawā	24,933	5,597	22.5	17.2	27.7
Waiʻanae	29,905	8,874	29.7	23.9	35.5
Waialua	9,799	1,393	14.2	7.7	20.8
Koʻolauloa	13,364	3,278	24.5	16.7	32.3
Koʻolaupoko	93,505	15,154	16.2	14.0	18.5
Hawaiʻi	119,709	23,596	19.7	18.3	21.1
Hilo	38,104	8,010	21.0	18.4	23.7
Puna	16,249	3,473	21.4	17.5	25.3
Kaʻu	13,988	3,212	23.0	18.1	27.8
South Kona	8,480	1,624	19.2	14.2	24.1
North Kona	22,056	3,631	16.5	13.6	19.4
South Kohala	10,845	1,833	16.9	12.8	21.0
North Kohala	4,008	783	19.5	11.5	27.5
Hāmākua	5,960	1,031	17.3	11.5	23.1
Maui	100,444	20,333	20.2	18.5	22.0
Hāna	1,602	419	26.2	12.3	40.0
Makawao	29,541	5,640	19.1	15.8	22.4
Wailuku	46,600	9,131	19.6	16.9	22.3
Lāhainā	13,778	3,099	22.5	17.6	27.4
Lānaʻi	2,509	496	19.8	14.2	25.3
Molokaʻi	6,115	1,492	24.4	19.7	29.1
Kauaʻi	44,013	8,885	20.2	18.1	22.3
Hanalei	5,281	843	16.0	10.6	21.4
Kapaʻa	13,097	2,645	20.2	16.5	23.9
Līhuʻe	8,988	1,779	19.8	15.3	24.3
Kōloa	10,392	1,941	18.7	14.6	22.8
Waimea	6,199	1,676	27.0	20.5	33.6

Source: State of Hawaiʻi, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS).

Chart 20: Estimated Annual Adult Smokers, 2002-2006



Source: State of Hawaiʻi, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS).

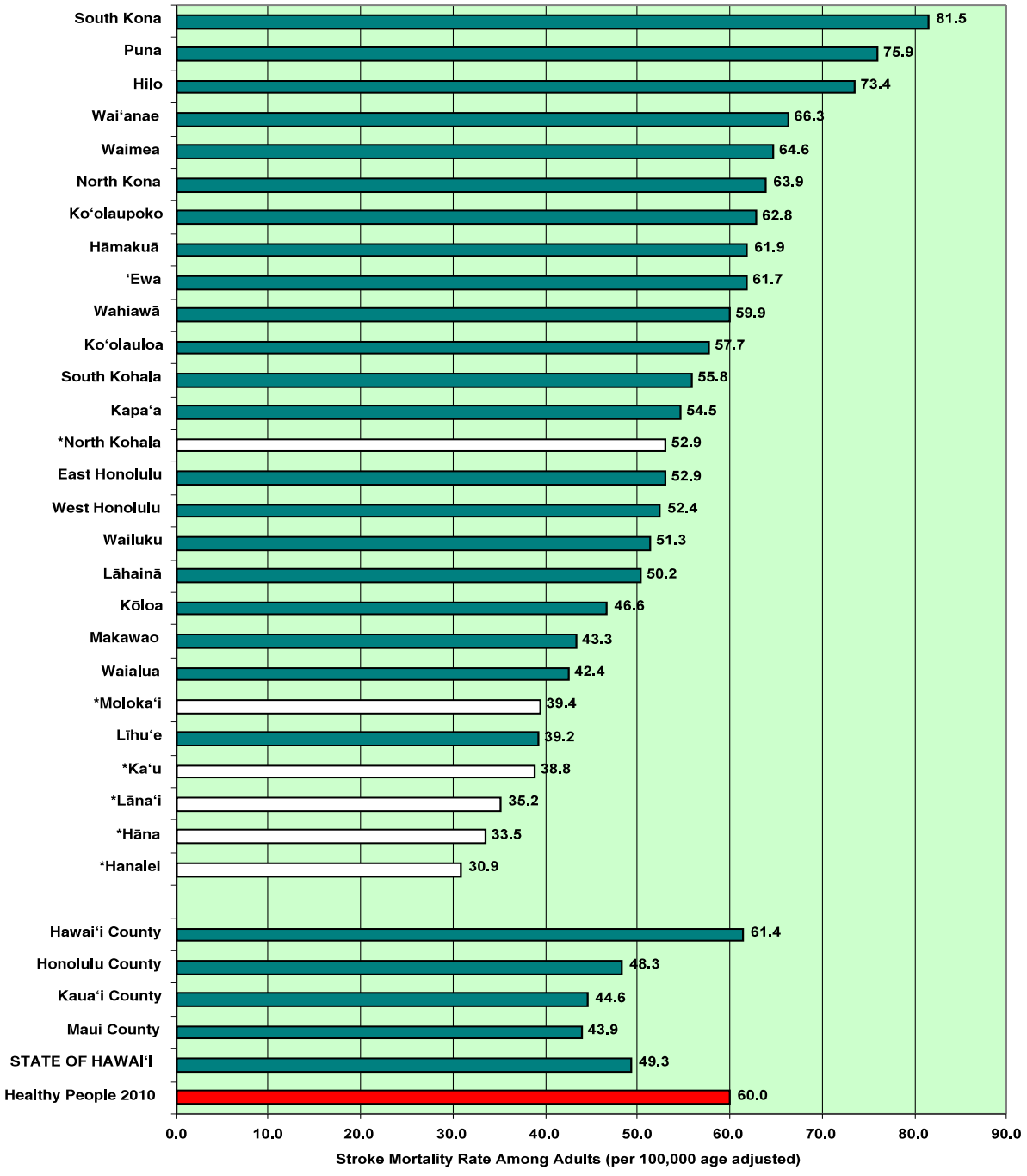
Table 17: Stroke Mortality Rate (age adjusted), 2002-2006

Service Area	Population	Number of Stroke Deaths	Stroke Mortality Rate (per 100,000 age adjusted)	95% Confidence Interval	
				Lower Limit	Upper Limit
State	6,296,930	3,571	49.3	49.3	49.3
Honolulu	4,489,703	2,547	48.3	48.3	48.3
East Honolulu	1,221,137	978	52.9	52.9	52.9
West Honolulu	684,352	429	52.4	52.4	52.4
ʻEwa	1,397,676	586	61.8	61.7	61.8
Wahiawā	196,621	79	59.9	59.9	59.9
Waiʻanae	216,550	87	66.3	66.2	66.3
Waialua	71,879	26	42.4	42.4	42.4
Koʻolauloa	96,845	37	57.7	57.6	57.7
Koʻolaupoko	604,642	316	62.8	62.8	62.8
Hawaiʻi	811,599	562	61.5	61.4	61.5
Hilo	258,671	258	73.4	73.4	73.4
Puna	171,052	92	75.9	75.9	75.9
Kaʻu	31,808	13	38.8	—	—
South Kona	46,886	35	81.5	81.5	81.6
North Kona	155,811	82	63.9	63.9	64.0
South Kohala	71,680	26	55.8	55.8	55.8
North Kohala	32,960	18	53.0	—	—
Hāmākua	42,732	36	61.9	61.8	61.9
Maui	688,153	297	43.9	43.9	43.9
Hāna	9,966	3	33.5	—	—
Makawao	195,958	66	43.3	43.3	43.3
Wailuku	329,566	165	51.3	51.3	51.3
Lāhainā	96,523	38	50.2	50.2	50.3
Lānaʻi	17,154	8	35.2	—	—
Molokaʻi	38,986	15	39.4	—	—
Kauaʻi	307,475	165	44.6	44.6	44.6
Hanalei	33,386	8	30.9	—	—
Kapaʻa	97,429	46	54.5	54.5	54.5
Līhuʻe	63,227	32	39.2	39.2	39.2
Kōloa	67,556	39	46.6	46.6	46.7
Waimea	45,035	40	64.6	64.6	64.6

Source: State of Hawaiʻi, Department of Health, Office of Health Status Monitoring (OHSM).

No confidence intervals were computed when the numerators were less than 20. Instead, standardized ratios were computed and found to be less than the standardized ratio of 200, implying that the rates were not significantly higher than those of the State of Hawaiʻi. See Family Health Outcomes project (FHOP), Guidelines for Using Federal Data Templates with Small Numbers (May 1, 1997).

Chart 21: Stroke Mortality Rate Among Adults (age adjusted), 2002-2006



Source: State of Hawaiʻi, Department of Health, Office of Health Status Monitoring (OHSM).

* Standardized ratios were computed and found to be less than the standardized ratio of 200, implying that the rates were not significantly higher than those of the State of Hawaiʻi. See Family Health Outcomes project (FHOP), Guidelines for Using Federal Data Templates with Small Numbers (May 1, 1997). However, to avoid misinterpretations these areas are low-lighted as a warning. Low-lighted bars should **NOT** be compared to colored bars. Refer to discussion, "The Small Numbers Problem," on page 6.

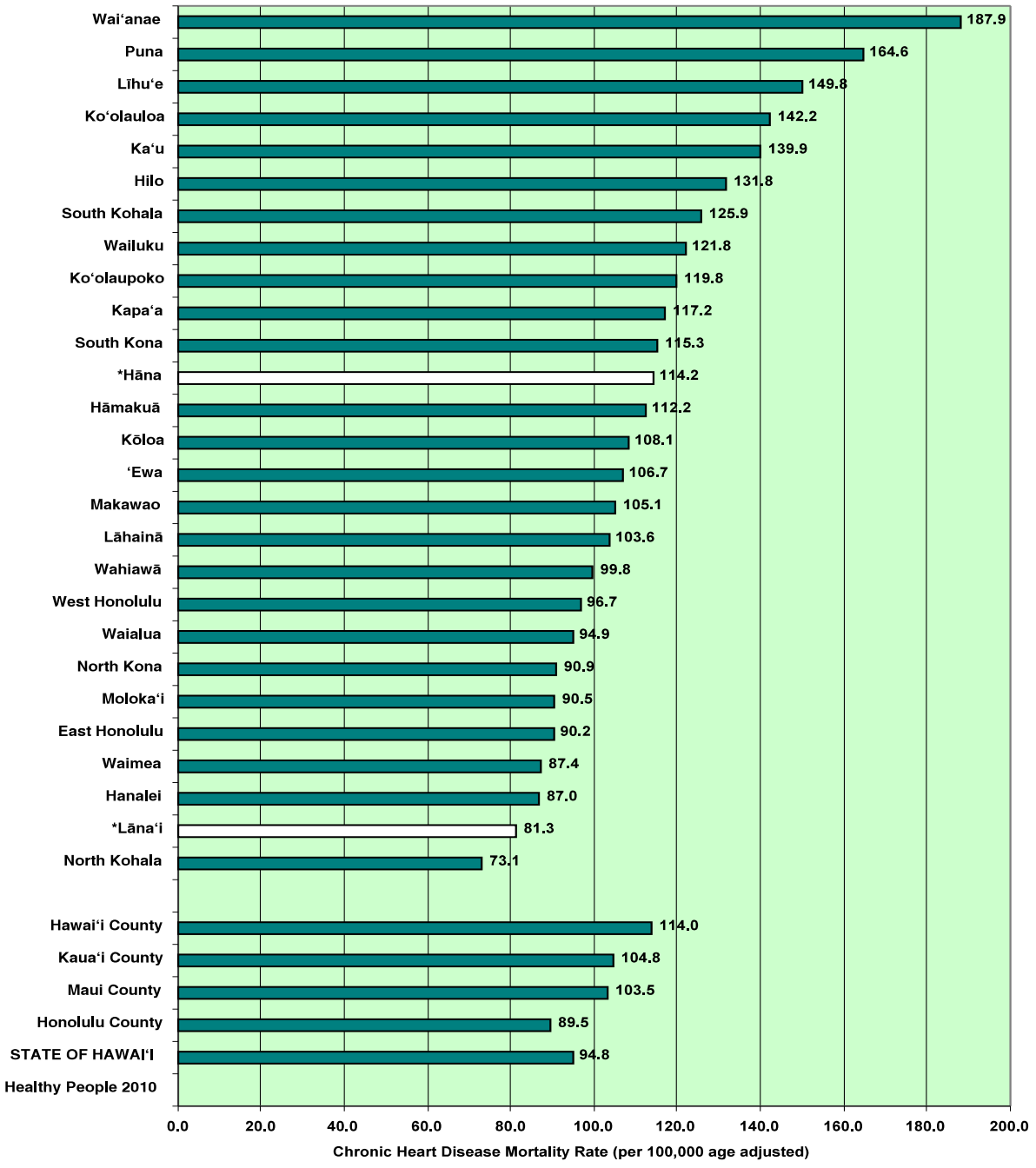
Table 18: Chronic Heart Disease (CHD) Mortality Rate (age adjusted), 2002-2006

Service Area	Population	Number of CHD Deaths	CHD Mortality Rate (per 100,000 age adjusted)	95% Confidence Interval	
				Lower Limit	Upper Limit
State	6,296,930	6,768	94.8	94.8	94.8
Honolulu	4,489,703	4,626	89.6	89.6	89.6
East Honolulu	1,221,137	1,620	90.2	90.2	90.2
West Honolulu	684,352	765	96.7	96.7	96.7
ʻEwa	1,397,676	1,063	106.7	106.7	106.7
Wahiawā	196,621	126	99.8	99.8	99.8
Waiʻanae	216,550	264	187.9	187.9	187.9
Waialua	71,879	58	94.9	94.9	95.0
Koʻolauloa	96,845	93	142.2	142.2	142.3
Koʻolaupoko	604,642	618	119.8	119.8	119.8
Hawaiʻi	811,599	1,044	114.0	114.0	114.0
Hilo	258,671	448	131.8	131.8	131.8
Puna	171,052	208	164.6	164.6	164.6
Kaʻu	31,808	50	139.9	139.9	140.0
South Kona	46,886	55	115.3	115.2	115.3
North Kona	155,811	126	90.9	90.9	90.9
South Kohala	71,680	63	125.9	125.8	125.9
North Kohala	32,960	25	73.1	73.1	73.1
Hāmākua	42,732	65	112.3	112.2	112.3
Maui	688,153	703	103.5	103.5	103.5
Hāna	9,966	9	114.2	—	—
Makawao	195,958	167	105.1	105.1	105.1
Wailuku	329,566	391	121.8	121.8	121.8
Lāhainā	96,523	82	103.6	103.5	103.6
Lānaʻi	17,154	18	81.3	—	—
Molokaʻi	38,986	35	90.5	90.4	90.5
Kauaʻi	307,475	395	104.8	104.8	104.8
Hanalei	33,386	24	87.0	86.9	87.0
Kapaʻa	97,429	102	117.2	117.2	117.2
Līhuʻe	63,227	126	149.9	149.8	149.9
Kōloa	67,556	90	108.1	108.1	108.2
Waimea	45,035	52	87.4	87.3	87.4

Source: State of Hawaiʻi, Department of Health, Office of Health Status Monitoring (OHSM).

No confidence intervals were computed when the numerators were less than 20. Instead, standardized ratios were computed and found to be less than the standardized ratio of 200, implying that the rates were not significantly higher than those of the State of Hawaiʻi. See Family Health Outcomes project (FHOP), Guidelines for Using Federal Data Templates with Small Numbers (May 1, 1997).

Chart 22: Chronic Heart Disease (CHD) Mortality Rate (age adjusted), 2002-2006



Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring (OHSM).

* Standardized ratios were computed and found to be less than the standardized ratio of 200, implying that the rates were not significantly higher than those of the State of Hawai'i. See Family Health Outcomes project (FHOP), Guidelines for Using Federal Data Templates with Small Numbers (May 1, 1997). However, to avoid misinterpretations these areas are low-lighted as a warning. Low-lighted bars should **NOT** be compared to colored bars. Refer to discussion, "The Small Numbers Problem," on page 6.

Table 19: Chronic Disease Health Risk Indicators, 2002-2006

Service Area	Estimated Annual Percent of Adults with Diabetes	Estimated Annual Percent of Adults Who are Obese	Estimated Annual Percent of Adults who Smoke	Stroke Mortality Rate (per 100,000 age adjusted)	CHD Mortality Rate (per 100,000 age adjusted)
State	7.2%	19.0%	18.0%	94.8	66.5
Honolulu	7.3%	18.9%	17.2%	89.6	106.8
East Honolulu	6.3%	14.1%	15.8%	90.2	96.0
West Honolulu	5.6%	15.0%	18.4%	96.7	107.2
ʻEwa	7.5%	19.8%	15.6%	106.7	104.0
Wahiawā	7.8%	19.7%	22.5%	99.8	126.1
Waiʻanae	14.5%	42.9%	29.7%	187.9	161.7
Waialua	12.1%	18.4%	14.2%	94.9	106.7
Koʻolauloa	6.4%	26.8%	24.5%	142.2	154.0
Koʻolaupoko	7.8%	21.7%	16.2%	119.8	127.9
Hawaiʻi	7.2%	20.3%	19.7%	114.0	135.1
Hilo	7.5%	21.0%	21.0%	131.8	155.0
Puna	6.4%	20.3%	21.4%	164.6	152.8
Kaʻu	9.1%	24.4%	23.0%	139.9	138.1
South Kona	9.0%	18.5%	19.2%	115.3	154.9
North Kona	4.5%	18.3%	16.5%	90.9	100.2
South Kohala	5.0%	17.9%	16.9%	125.9	119.5
North Kohala	9.8%	22.0%	19.5%	73.1	88.3
Hāmākua	11.7%	21.1%	17.3%	112.3	106.2
Maui	5.8%	18.6%	20.2%	103.5	115.0
Hāna	5.1%	14.9%	26.2%	114.2	81.1
Makawao	4.2%	12.8%	19.1%	105.1	103.1
Wailuku	6.1%	19.5%	19.6%	121.8	130.2
Lāhainā	6.5%	22.2%	22.5%	103.6	96.4
Lānaʻi	6.0%	14.4%	19.8%	81.3	87.1
Molokaʻi	9.8%	35.4%	24.4%	90.5	102.1
Kauaʻi	7.5%	18.1%	20.2%	104.8	124.4
Hanalei	3.3%	15.3%	16.0%	87.0	94.1
Kapaʻa	7.2%	20.0%	20.2%	117.2	132.6
Līhuʻe	10.8%	16.4%	19.8%	149.9	161.5
Kōloa	7.3%	16.2%	18.7%	108.1	122.3
Waimea	7.2%	21.9%	27.0%	87.4	88.5

Table 20: Ranking Based on Chronic Disease Risk Scores

Service Area County-wide	Risk Rank	Risk Score
Honolulu	*(highest)*	
Waiʻanae	1	10.35
Koʻolauloa	2	2.85
Wahiawā	3	0.77
Koʻolaupoko	4	0.65
ʻEwa	5	-0.30
Waialua	6	-0.89
West Honolulu	7	-1.83
East Honolulu	8	-2.43
	(lowest)	
Hawaiʻi	*(highest)*	
Puna	1	3.12
Hilo	2	2.37
South Kona	3	2.13
Kaʻu	4	1.84
Hāmākua	5	1.66
North Kohala	6	-0.07
South Kohala	7	-0.84
North Kona	8	-1.54
	(lowest)	
Maui	*(highest)*	
Molokaʻi	1	2.39
Lāhainā	2	0.26
Wailuku	3	-0.17
Hāna	4	-1.17
Makawao	5	-2.74
Lānaʻi	6	-3.05
	(lowest)	
Kauaʻi	*(highest)*	
Waimea	1	1.68
Līhuʻe	2	0.94
Kapaʻa	3	0.39
Kōloa	4	-1.13
Hanalei	5	-4.53
	(lowest)	

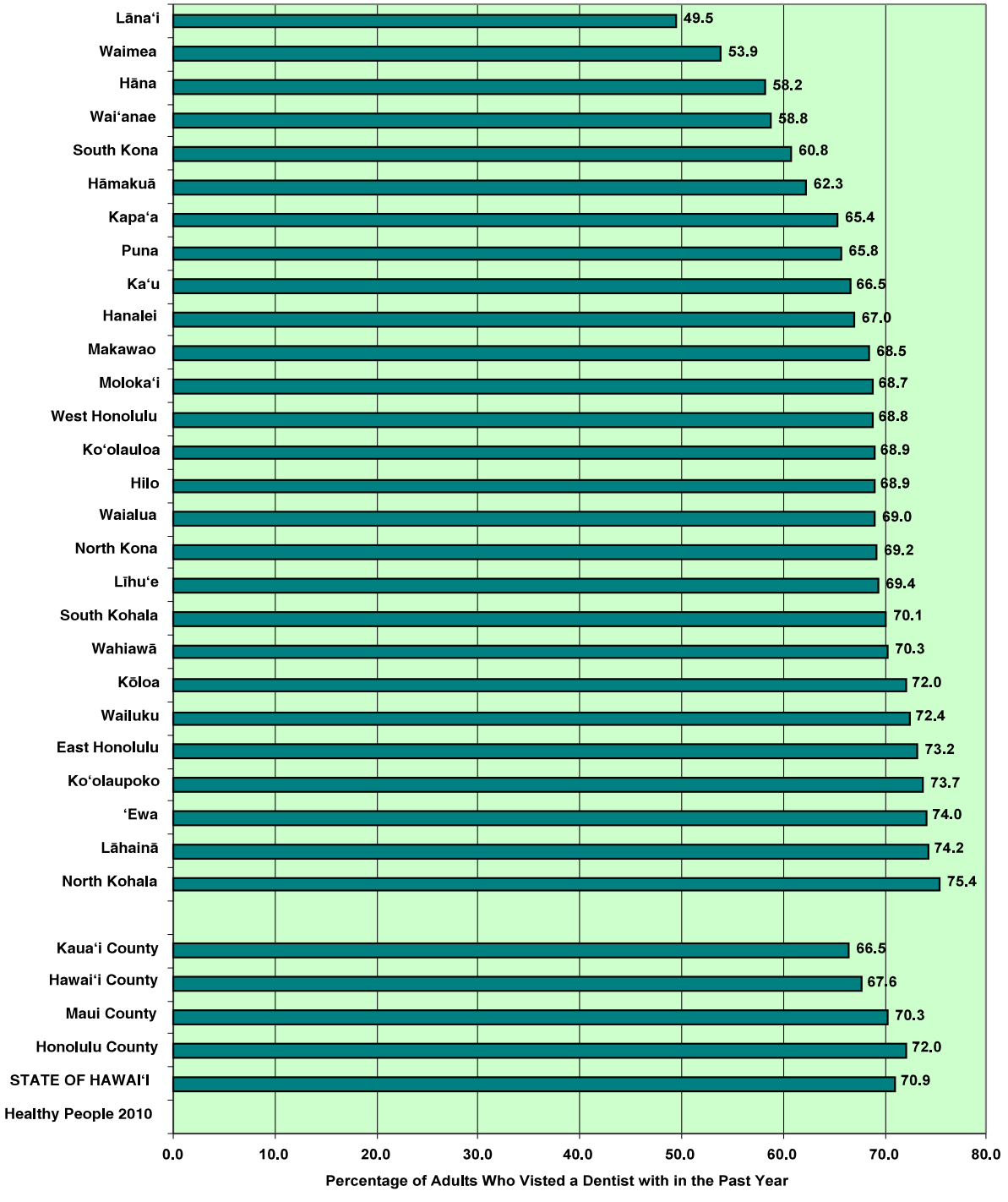
Service Area State-wide	Risk Rank	Risk Score
State of Hawaiʻi	*(highest)*	
Waiʻanae	1	10.35
Puna	2	3.12
Koʻolauloa	3	2.85
Molokaʻi	4	2.39
Hilo	5	2.37
South Kona	6	2.13
Kaʻu	7	1.84
Waimea	8	1.68
Hāmākua	9	1.66
Līhuʻe	10	0.94
Wahiawā	11	0.77
Koʻolaupoko	12	0.65
Kapaʻa	13	0.39
Lāhainā	14	0.26
North Kohala	15	-0.07
Wailuku	16	-0.17
ʻEwa	17	-0.30
South Kohala	18	-0.84
Waialua	19	-0.89
Kōloa	20	-1.13
Hāna	21	-1.17
North Kona	22	-1.54
West Honolulu	23	-1.83
East Honolulu	24	-2.43
Makawao	25	-2.74
Lānaʻi	26	-3.05
Hanalei	27	-4.53
	(lowest)	

Table 21: Estimated Annual Number of Adults Who Visited a Dentist within the Past Year, 2002, 2004, 2006

Service Area	Estimated Annual Adult Population	Estimated Annual Number of Adults Who Visited Dentist	Estimated Annual Percent of Adults Who Visited Dentist w/in Past Year	95% Confidence Interval	
				Lower Limit	Upper Limit
State	954,978	677,245	70.9	69.8	72.1
Honolulu	663,991	478,212	72.0	70.5	73.5
East Honolulu	188,929	138,298	73.2	70.8	75.6
West Honolulu	92,327	63,488	68.8	64.3	73.2
ʻEwa	215,782	159,716	74.0	71.2	76.8
Wahiawā	25,373	17,843	70.3	61.4	79.3
Waiʻanae	29,895	17,583	58.8	50.3	67.3
Waialua	9,955	6,872	69.0	55.8	82.3
Koʻolauloa	12,376	8,528	68.9	58.7	79.1
Koʻolaupoko	89,355	65,884	73.7	69.9	77.6
Hawaiʻi	120,640	81,554	67.6	65.4	69.8
Hilo	37,677	25,971	68.9	65.1	72.8
Puna	15,566	10,236	65.8	59.8	71.7
Kaʻu	16,296	10,841	66.5	58.9	74.2
South Kona	8,767	5,328	60.8	51.6	70.0
North Kona	21,512	14,888	69.2	64.6	73.8
South Kohala	10,280	7,209	70.1	63.2	77.0
North Kohala	4,079	3,077	75.4	65.1	85.8
Hāmākua	6,430	4,004	62.3	52.1	72.4
Maui	99,494	69,956	70.3	67.8	72.8
Hāna	1,612	938	58.2	37.0	79.4
Makawao	29,722	20,353	68.5	63.4	73.5
Wailuku	44,864	32,494	72.4	68.7	76.1
Lāhainā	14,072	10,444	74.2	67.5	80.9
Lānaʻi	2,486	1,230	49.5	42.3	56.7
Molokaʻi	6,406	4,401	68.7	62.9	74.5
Kauaʻi	43,451	28,897	66.5	63.4	69.7
Hanalei	5,334	3,576	67.1	58.5	75.6
Kapaʻa	12,994	8,492	65.4	59.5	71.3
Līhuʻe	8,760	6,081	69.4	62.7	76.1
Kōloa	10,563	7,607	72.0	66.0	78.0
Waimea	5,750	3,100	53.9	44.5	63.4

Source: State of Hawaiʻi, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS).
Note: question is asked on even years in the BRFSS.

Chart 23: Estimated Annual Number of Adults Who Visited a Dentist within the Past Year, Aggregated Over 2002, 2004, and 2006



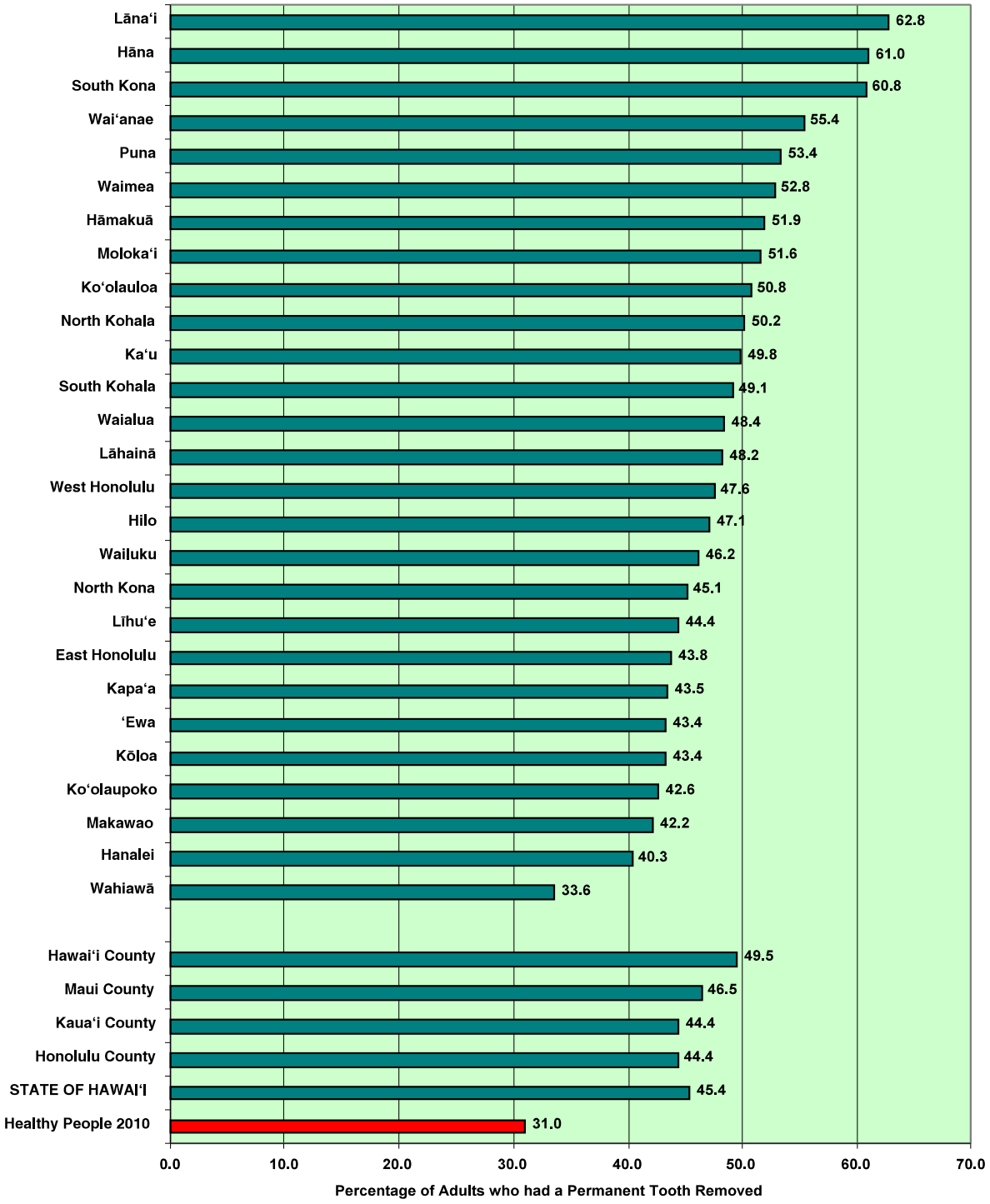
Source: State of Hawai'i, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS).
Note: question is asked on even years in the BRFSS.

Table 22: Estimated Annual Number of Adults Who had any Permanent Teeth Removed, 2002, 2004, 2006

Service Area	Estimated Annual Adult Population	Estimated Annual Number of Adults Who had any Permanent Teeth Removed	Estimated Annual Percent of Adults Who had Any Permanent Teeth Removed	95% Confidence Interval	
				Lower Limit	Upper Limit
State	937,898	426,175	45.4	44.2	46.7
Honolulu	652,355	289,325	44.4	42.7	46.0
East Honolulu	185,132	81,035	43.8	40.9	46.6
West Honolulu	90,863	43,222	47.6	43.0	52.2
ʻEwa	211,921	91,883	43.4	40.3	46.4
Wahiawā	25,273	8,490	33.6	25.3	41.9
Waiʻanae	29,726	16,463	55.4	46.7	64.0
Waialua	10,012	4,847	48.4	34.2	62.6
Koʻolauloa	12,187	6,185	50.8	39.3	62.3
Koʻolaupoko	87,241	37,201	42.6	38.4	46.9
Hawaiʻi	118,668	58,750	49.5	47.1	51.9
Hilo	36,925	17,405	47.1	43.1	51.2
Puna	15,436	8,241	53.4	46.9	59.9
Kaʻu	16,163	8,056	49.8	41.3	58.4
South Kona	8,732	5,310	60.8	51.8	69.8
North Kona	21,024	9,486	45.1	40.1	50.1
South Kohala	10,034	4,931	49.2	41.6	56.7
North Kohala	4,001	2,008	50.2	37.0	63.4
Hāmākua	6,323	3,282	51.9	41.5	62.3
Maui	97,880	45,467	46.5	43.6	49.3
Hāna	1,598	975	61.0	41.2	80.8
Makawao	29,032	12,254	42.2	37.1	47.4
Wailuku	44,394	20,499	46.2	41.6	50.7
Lāhainā	13,682	6,600	48.2	40.2	56.3
Lānaʻi	2,469	1,550	62.8	56.2	69.4
Molokaʻi	6,373	3,289	51.6	45.0	58.3
Kauaʻi	43,044	19,129	44.4	41.2	47.7
Hanalei	5,216	2,104	40.3	31.6	49.0
Kapaʻa	13,031	5,663	43.5	37.8	49.1
Līhuʻe	8,604	3,822	44.4	37.5	51.4
Kōloa	10,516	4,559	43.4	36.5	50.2
Waimea	5,628	2,972	52.8	43.3	62.4

Source: State of Hawaiʻi, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS).
Note: question is asked on even years in the BRFSS.

Chart 24: Estimated Annual Number of Adults Who had any Permanent Teeth Removed, Aggregated Over 2002, 2004, and 2006



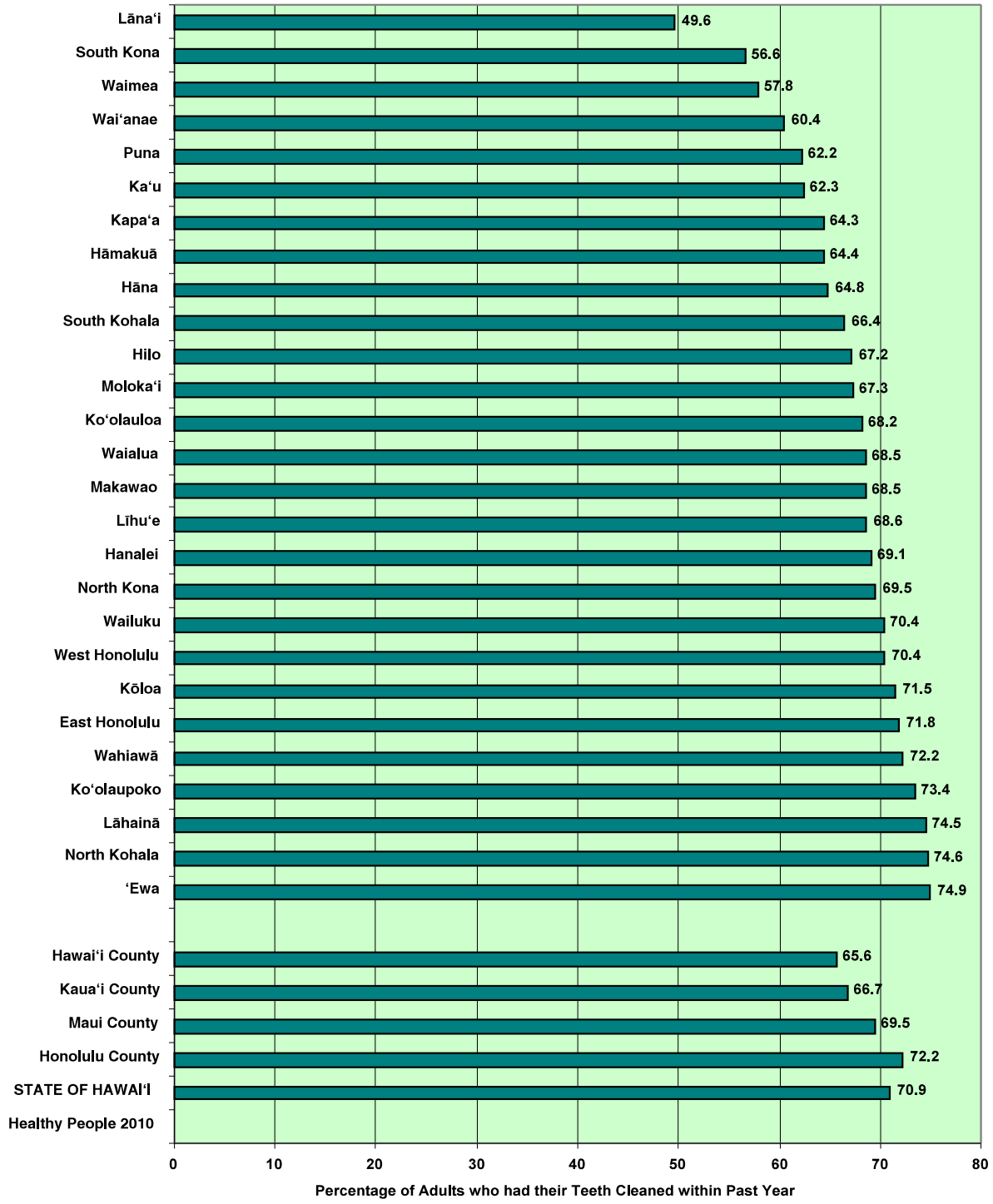
Source: State of Hawai'i, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS).
Note: question is asked on even years in the BRFSS.

Table 23: Estimated Annual Number of Adults Who had Their Teeth Cleaned within Past Year, 2002, 2004, and 2006

Service Area	Estimated Annual Adult Population	Estimated Annual of Adults Who Had Teeth Cleaned within Past Year	Estimated Annual Percent of Adults Who had Teeth Cleaned within Past Year	95% Confidence Interval	
				Lower Limit	Upper Limit
State	920,388	652,897	70.9	69.8	72.1
Honolulu	641,249	463,259	72.2	70.7	73.8
East Honolulu	183,753	132,017	71.8	69.2	74.5
West Honolulu	89,116	62,741	70.4	65.9	74.9
ʻEwa	208,606	156,297	74.9	72.2	77.6
Wahiawā	24,773	17,878	72.2	63.1	81.3
Waiʻanae	28,277	17,087	60.4	51.8	69.1
Waialua	9,107	6,240	68.5	54.8	82.3
Koʻolauloa	11,938	8,137	68.2	57.7	78.7
Koʻolaupoko	85,679	62,862	73.4	69.4	77.4
Hawaiʻi	115,889	76,033	65.6	63.3	67.9
Hilo	36,586	24,582	67.2	63.3	71.1
Puna	14,798	9,206	62.2	55.9	68.5
Kaʻu	15,451	9,633	62.4	54.2	70.5
South Kona	8,137	4,605	56.6	47.2	66.0
North Kona	20,907	14,530	69.5	64.7	74.3
South Kohala	9,939	6,602	66.4	59.0	73.9
North Kohala	4,026	3,005	74.7	63.7	85.6
Hāmākua	6,014	3,871	64.4	54.4	74.3
Maui	95,957	66,656	69.5	66.8	72.1
Hāna	1,582	1,026	64.8	45.2	84.5
Makawao	28,705	19,672	68.5	63.4	73.7
Wailuku	43,156	30,363	70.4	66.3	74.4
Lāhainā	13,677	10,190	74.5	67.8	81.2
Lānaʻi	2,396	1,188	49.6	42.2	57.0
Molokaʻi	6,139	4,128	67.3	61.2	73.4
Kauaʻi	41,989	28,026	66.8	63.6	69.9
Hanalei	5,064	3,499	69.1	60.6	77.7
Kapaʻa	12,618	8,119	64.4	58.4	70.3
Līhuʻe	8,415	5,769	68.6	61.7	75.5
Kōloa	10,458	7,482	71.5	65.5	77.6
Waimea	5,384	3,115	57.9	48.5	67.2

Source: State of Hawaiʻi, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS).
Note: question is asked on even years in the BRFSS.

Chart 25: Estimated Annual Number of Adults Who had Their Teeth Cleaned within Past Year, Aggregated Over 2002, 2004, and 2006



Source: State of Hawai'i, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS).
Note: question is asked on even years in the BRFSS.

Table 24: Adult Oral Health Risk Indicators, 2002, 2004, 2006

Service Area	Estimated Annual Percent of Adults Who Did Not Visit a Dentist within the Past Year	Estimated Annual Percent of Adults Who had Any Permanent Teeth Removed	Estimated Annual Percent of Adults Who Did Not Have Their Teeth Cleaned within Past Year
State	29.1%	45.4%	29.1%
Honolulu	28.0%	44.4%	27.8%
East Honolulu	26.8%	43.8%	28.2%
West Honolulu	31.2%	47.6%	29.6%
ʻEwa	26.0%	43.4%	25.1%
Wahiawā	29.7%	33.6%	27.8%
Waiʻanae	41.2%	55.4%	39.6%
Waialua	31.0%	48.4%	31.5%
Koʻolauloa	31.1%	50.8%	31.8%
Koʻolaupoko	26.3%	42.6%	26.6%
Hawaiʻi	32.4%	49.5%	34.4%
Hilo	31.1%	47.1%	32.8%
Puna	34.2%	53.4%	37.8%
Kaʻu	33.5%	49.8%	37.7%
South Kona	39.2%	60.8%	43.4%
North Kona	30.8%	45.1%	30.5%
South Kohala	29.9%	49.1%	33.6%
North Kohala	24.6%	50.2%	25.4%
Hāmākua	37.7%	51.9%	35.6%
Maui	29.7%	46.5%	30.5%
Hāna	41.8%	61.0%	35.2%
Makawao	31.5%	42.2%	31.5%
Wailuku	27.6%	46.2%	29.6%
Lāhainā	25.8%	48.2%	25.5%
Lānaʻi	50.5%	62.8%	50.4%
Molokaʻi	31.3%	51.6%	32.7%
Kauaʻi	33.5%	44.4%	33.3%
Hanalei	33.0%	40.3%	30.9%
Kapaʻa	34.6%	43.5%	35.7%
Līhuʻe	30.6%	44.4%	31.4%
Kōloa	28.0%	43.4%	28.5%
Waimea	46.1%	52.8%	42.2%

Table 25: Ranking Based on Adult Oral Health Risk Scores

Service Area County-wide	Risk Rank	Risk Score
Honolulu	*(highest)*	
Waiʻanae	1	-5.33
Koʻolauloa	2	-7.15
Waialua	3	-7.20
West Honolulu	4	-7.37
Wahiawā	5	-7.72
East Honolulu	6	-7.97
Koʻolaupoko	7	-8.19
ʻEwa	8	-8.38
	(lowest)	
Hawaiʻi	*(highest)*	
South Kona	1	-5.13
Hāmākua	2	-6.09
Puna	3	-6.22
Kaʻu	4	-6.31
South Kohala	5	-7.10
North Kona	6	-7.32
Hilo	7	-7.35
North Kohala	8	-8.49
	(lowest)	
Maui	*(highest)*	
Lānaʻi	1	-2.06
Hāna	2	-4.68
Molokaʻi	3	-6.80
Makawao	4	-7.72
Wailuku	5	-7.97
Lāhainā	6	-8.41
	(lowest)	
Kauaʻi	*(highest)*	
Waimea	1	-4.56
Kapaʻa	2	-6.40
Hanalei	3	-7.06
Līhuʻe	4	-7.25
Kōloa	5	-7.82
	(lowest)	

Service Area State-wide	Risk Rank	Risk Score
State of Hawaiʻi	*(highest)*	
Lānaʻi	1	-2.06
South Kona	2	-4.10
Waimea	3	-4.23
Hāna	4	-4.68
Waiʻanae	5	-4.77
Hāmākua	6	-5.83
Puna	7	-5.83
Kaʻu	8	-6.22
Molokaʻi	9	-6.80
Kapaʻa	10	-6.86
Koʻolauloa	11	-6.99
South Kohala	12	-7.07
Hilo	13	-7.21
Waialua	14	-7.24
West Honolulu	15	-7.49
Līhuʻe	16	-7.63
North Kona	17	-7.65
Makawao	18	-7.72
Hanalei	19	-7.80
Wailuku	20	-7.97
Kōloa	21	-8.30
North Kohala	22	-8.38
Lāhainā	23	-8.41
East Honolulu	24	-8.41
Koʻolaupoko	25	-8.72
ʻEwa	26	-8.85
Wahiawā	27	-9.03
	(lowest)	

Primary Care Needs Assessment Data Book Feedback

Family Health Services Division
Attn: PCNA Data Book Feedback
3652 Kīlauea Avenue
Honolulu, HI 96816
FAX: 733-8369

The Family Health Services Division is committed to making the Primary Care Needs Assessment Data Book as useful and user-friendly as possible. Please complete this questionnaire and mail of fax it to us. Mahalo for your assistance.

Organizational Identity (circle one)

1. The phrase that best describes your entity:
   (a) Community Non-Profit (b) Government Office
   (c) Student/Educational Institution (d) For Profit Medical-Provider
   (e) Political Representative (f) Private Citizen
   (g) Other: _____

2. Your organization's focus can be described as:
   (a) Health Care Services (b) Planning
   (c) Government Representation (d) Community Development
   (e) Other: _____

Feedback on the data book

3. Activities that the data book helps you accomplish:
   (a) Planning (b) Needs Assessment
   (c) Grant Writing (d) Facility or Services Planning
   (e) Recruitment or Retention of Providers (f) Other: _____

4. Which health indicators/information did you find most useful?

_____
_____
_____

5. Which health indicators/information did you fine least helpful?

_____
_____
_____

6. What other data/information would you like included in a future data book?

_____
_____
_____

7. If this data book was accessible on an internet website would you use it? (YES) (NO)

8. Would you still require a printed version of the data book? (YES) (NO)